Engineering and Technical Management Workforce Report

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Office of Systems Engineering and Architecture

Office of the Under Secretary of Defense for Research and Engineering

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1 Introduction

The U.S. Department of Defense (DoD) is dedicated to continuously acquiring, developing, and retaining skilled government civilian and military professionals to address both current and future requirements in a fast-changing technological landscape. This document provides a comprehensive report of initiatives to ensure the health and technical capability of the current and future Engineering and Technical Management (ETM) workforce.

ETM is one of seven functional areas (FAs) that make up the defense acquisition workforce (Under Secretary of Defense for Acquisition and Sustainment (USD(A&S)) Memorandum, 2020). The acquisition workforce consists of professional, agile, and high-performing military and civilian professionals who meet uniform eligibility criteria, make smart business decisions, act in an ethical manner, and deliver timely and affordable capabilities to the warfighter. The ETM workforce has a vital role in developing, fielding, and sustaining high-quality, innovative, affordable, supportable, and effective defense systems and ensuring that DoD products are delivered on time, perform as expected, and are cost-effective. This requires developing and implementing products and services with an integrated technical approach across the life cycle. It also includes providing the systems, software, and people to satisfy stakeholder needs and expedite transition of technology to the user, as well as early production planning and systematically examining producibility. The ETM workforce has the strategic perspective, technical competence, and critical thinking needed to operate within various product domains and other engineering and technical disciplines.

1.1 Acquisition Workforce Governance

As laid out in DoD Instruction (DoDI) 5000.66[1], "Defense Acquisition Workforce Education, Training, Experience, and Career Development Program," the DoD established a management oversight structure for the strategic planning, governance, and execution of the DoD acquisition workforce program. This oversight structure includes the Workforce Leadership Team (WLT), the Workforce Management Group (WMG), and Functional Area Leaders (FALs).

The WLT provides oversight and direction for the DoD acquisition workforce program, integrating enterprise requirements and aligning supporting initiatives with strategic workforce goals and resources. The WMG is an action officer level group supporting the WLT. FALs serve as the subject matter lead of their respective FA. FAL responsibilities include, but are not limited to, establishing and maintaining position category descriptions (PCDs), competency models, certification standards, key leadership position (KLP) functional specific requirements, and continuous learning (CL) recommendations for their FA. The FALs fulfill these responsibilities with the aid of a functional integration team (FIT), which the FALs are tasked with chartering and chairing. Other FAL responsibilities are outlined in DoDI 5000.66.

[1] DoDI 5000.66 implements Chapter 87 of Title 10, United States Code.

The Executive Director for Systems Engineering and Architecture (SE&A[2]) in the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)) serves as the FAL and designates the FIT Chair for the ETM FA. The ETM FIT is composed of functional and workforce management representatives from the Military Services and Defense Agencies (from this point forward referred to as Components) and partners from the Defense Acquisition University (DAU). The FIT supports the FAL in carrying out requirements (Table 1-1) by providing workforce perspectives and data-driven recommendations to guide decisions affecting the workforce. The FIT reviews the requirements annually and updates them as needed. The FAL approves any changes.

Table 1-1. FAL Requirements

Requirement	Description	Purpose
PCD	Reflects the primary duties associated with the FA	Used by Components for assigning defense acquisition positions to a FA
Competency Model	Reflects the knowledge and skills required to be a successful member of the FA	Used by DAU to develop FA training curriculum
Certification Standards	Education, training, and experience requirements for any defense acquisition workforce personnel pursuing certification in the FA	Used by FA members to meet their position certification requirements
KLP Functional Specific Requirements	Additional requirements beyond the certification standards to successfully perform in a KLP	Used by Components for selecting and assigning KLPs
CL Recommendations	Recommended CL activities to remain current within the FA	Used by FA members to select CL activities best suited to their position and individual development

1.2 Workforce Focus Areas

SE&A collaborates across the Department to identify workforce challenges and champion cross-cutting workforce initiatives (for the acquisition workforce, as well as the broader engineering workforce overall) concentrated on building technical capability and capacity to support current and future leadership priorities through actions (Plan, Identify, Execute, and Enable) across four focus areas (Figure 1-1):

- Forecast Future Talent Needs

[2] References to SE&A may include the predecessor office referred to as Engineering.

- Strengthen Talent Pipeline
- Advance Our Workforce Skills
- Close Capability Gaps

This report outlines how the ETM FIT Chair, in collaboration with the ETM FIT, will support the focus areas and carry out actions specifically for the ETM FA. These actions support the continued development of the ETM workforce as the needs of the DoD and the warfighter adapt to present and future challenges. The bullets associated with each action list all workforce development activities that SE&A may conduct; the activities applicable to the ETM workforce are covered in sections 2 through 5.

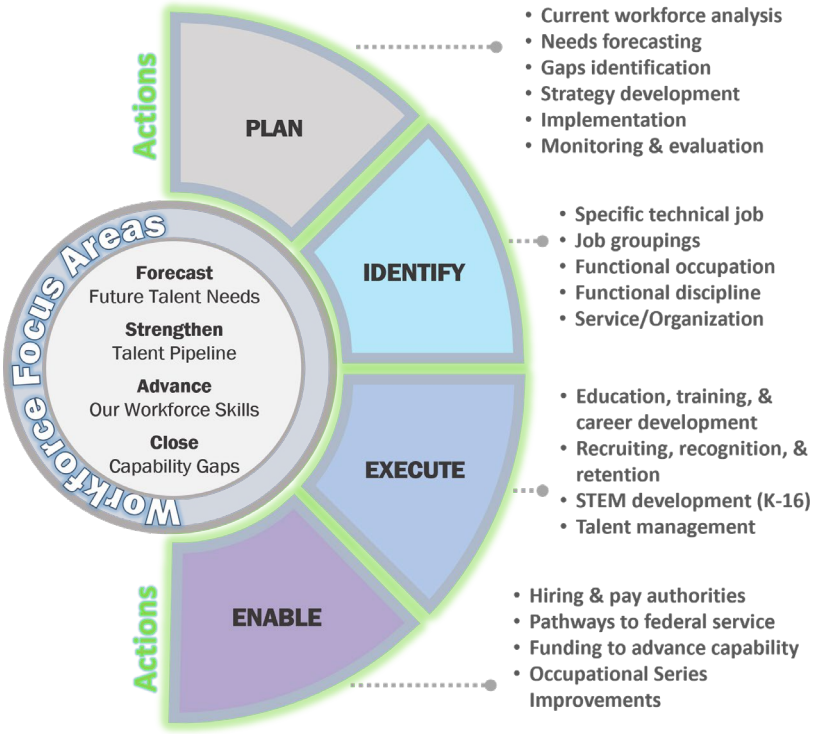

Figure 1-1. Workforce Focus Areas and Actions

1.3 Strategic Alignment

This report aligns with DoD strategies, policies, and guidance. The ETM FAL is dedicated to maintaining a competent, technical, mission-oriented workforce that can quickly and effectively adapt to dynamic mission needs, enabling the Department to make well-informed decisions in acquiring and sustaining DoD systems. To remain relevant and effective, the ETM workforce must possess a diverse set of knowledge and skills to succeed in a rapidly changing technological environment. The ETM workforce must be trained in emerging and critical technologies, strategic and critical thinking, and other technical disciplines, relying on training that is current, effective,

and yields positive results. As such, this report discusses how the ETM FAL intends to fill technical competency gaps to ensure the workforce is equipped with the necessary expertise for the DoD to maintain its technological superiority and advantage over adversaries.

This report will evolve as needs change. Future updates to this report and the referenced DoD strategies, policies, and guidance will provide additional direction and prioritization for the ETM workforce.

2 Plan: Workforce Analysis

Workforce analysis is a crucial step in understanding the current state of the workforce, identifying strengths and potential skill gaps, forecasting future needs, and making informed decisions about recruitment, retention, and skill development to align talent management efforts with strategic goals and future needs. The ETM FAL's staff accesses ETM workforce data from the OUSD(A&S) Defense Acquisition Workforce Data Mart, Defense Civilian Personnel Data System (DCPDS), and Defense Manpower Data Center to analyze trends in workforce size, distribution among Components and civilian and military occupations, key demographics, retirement eligibility, and gains and losses. In addition, ETM FAL staff analyzes annual workforce engagement data and trends of the DoD through analysis and reporting of the Office of Personnel Management (OPM) Federal Employee Viewpoint Survey (FEVS). This data supports talent development efforts, recruitment and retention initiatives, and executive outreach activities. Analysis of age and years to retirement eligibility as well as gains and losses indicated a need for increased discussion with the Components about available and applicable hiring and incentive authorities at their disposal.

Education level and fields of study analysis led to the creation of the Advanced Technical Degree Guidebook (2020) discussed in section 4.2.2. Further analysis of key demographics and FEVS results reinforced the need for continued involvement in DoD Science, Technology, Engineering, and Mathematics (STEM) Development Office initiatives. SE&A developed a DoD Engineering Recruitment Brochure, "DoD Engineers Make a Difference," which has been distributed at multiple STEM-focused outreach events. The brochure illustrates examples of innovations DoD engineers have contributed and opportunities available to students aspiring to a defense engineering career.

In addition to analyzing workforce-specific data, the ETM FAL staff works closely with DAU to evaluate certification course metrics and survey responses to include the number of student completions, student ratings of courses, course relevancy to job, and likelihood of recommending courses to colleagues. Through analysis of these key metrics and a detailed analysis of survey comments, the ETM FIT is able to make recommendations to the FAL on workforce competencies (section 3.2), certification standards (section 3.3), and supplemental training opportunities (section 4).

3 Identify: Current Engineering and Technical Management Workforce

The ETM workforce makes up the largest defense acquisition FA, containing over 60,000 personnel. Approximately 97 percent of these personnel are civilians, and the Navy consistently maintains the largest portion. The most common occupational series and military occupational codes are defined and outlined in the PCD.

3.1 Typical Occupational Series and Codes

Typical ETM civilian occupational series, in order from largest to smallest portions of the FA, are:

- Engineering and Architecture (08xx)
- Mathematics and Statistics (15xx)
- Information Technology Management (2210)
- Quality Assurance, Inspection, and Grading (1910)
- Physical Sciences (13xx)
- Business and Industry (11xx)
- General Administrative, Clerical, and Office Services (03xx)

Typical ETM military occupational codes, specific to each Service, are:

- Army: Not Applicable
- Navy: ANx
- Air Force[3]: 15x, 17x, 61x, 62x, 2Axxx
- Marine Corps: 8057, 8058, 8059, 8060, 8061

3.2 Competencies

The ETM competencies (Figure 3-2) reflect the knowledge and skills required to be successful as a member of the FA. The ETM FAL follows the five-tier DoD competency management framework outlined in DoDI 1400.25, volume 250, "DoD Civilian Personnel Management System: Civilian Strategic Human Capital Planning (SHCP)," and adapted for the acquisition environment in Figure 3-1.

[3] Space Force is included within Air Force because DCPDS does not currently have a separate organizational code for Space Force.

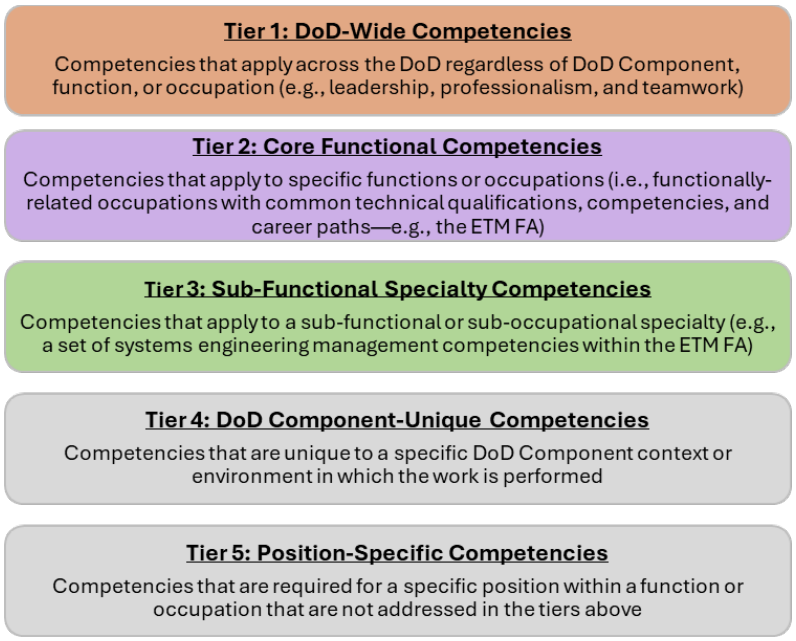

Figure 3-1. Five-Tiered Competency Framework

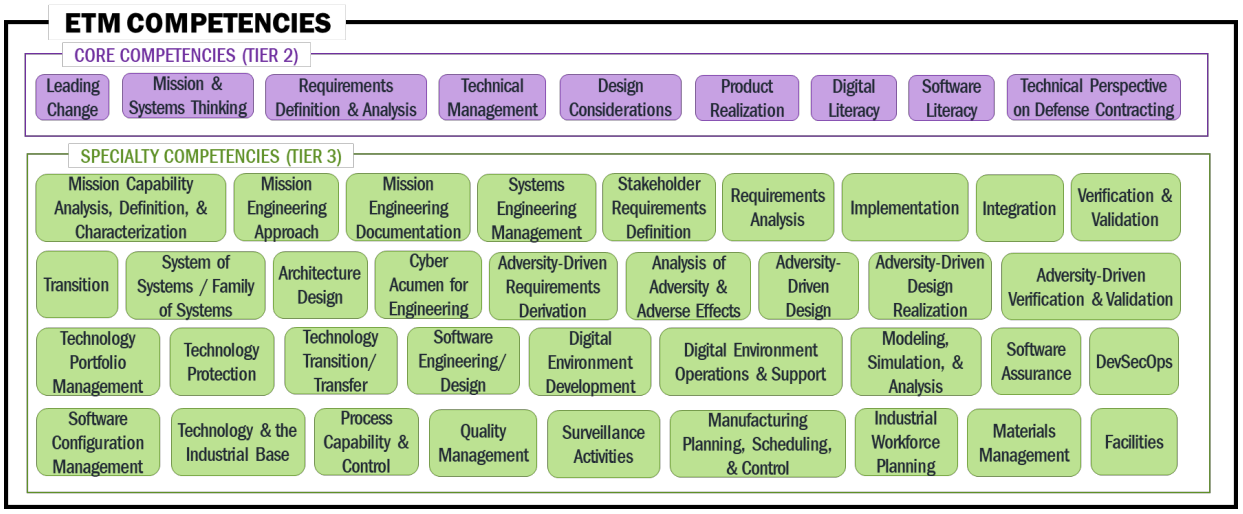

Figure 3-2. ETM Competencies as of June 24, 2024

Tier 1 (i.e., leadership/soft skills) competencies (not pictured) apply across the DoD acquisition workforce and are the responsibility of the WLT. Tier 2 competencies apply across discrete occupational series and functions (i.e., acquisition FAs) and drive the ETM certification training required by every ETM workforce member. Tier 3 competencies are unique to sub-occupational and sub-functional specialties and drive self-directed credential training. Tier 2 and 3 competencies are the responsibility of the FAL. Tier 4 competencies are Component-specific and unique to the context or environment in which the work is performed. Tier 5 competencies are those required for a particular position but not addressed in any other tier. Tier 4 and 5 competencies are the responsibility of the individual Components.

3.3 Certification Training and Standards

The ETM training is based on targeted proficiency levels for ETM competencies. Figure 3-3 depicts the five-level proficiency scale outlined in DoDI 1400.25, volume 250, used by the DoD.

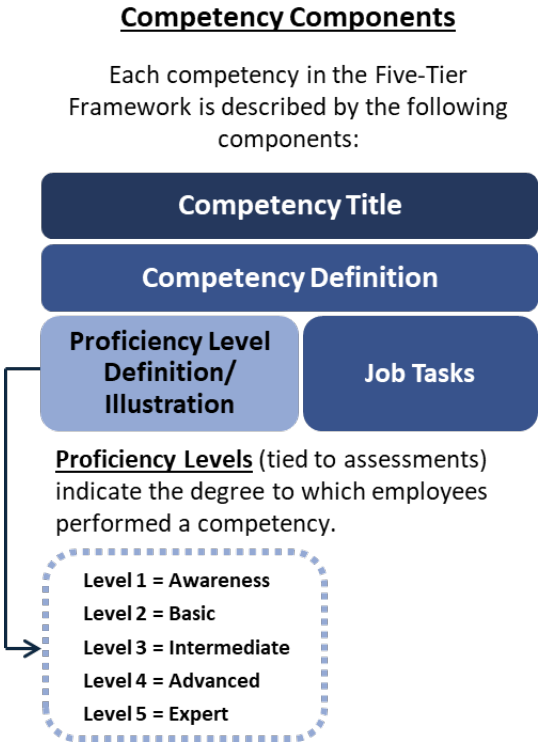

Figure 3-3. Competency Proficiency Levels

This method empowers the entire workforce by enhancing their awareness and basic skills, allowing them to comprehend the complexities and interconnections of their specific tasks within the broader FA. Such comprehension is vital in supporting the mission. DAU's responsibility lies in determining the optimal approach for developing the targeted proficiency of competencies through various learning assets (e.g., online training courses, instructor-led training, virtual instructor-led training, etc.).

The ETM workforce progresses through dedicated training based on targeted proficiency levels for ETM competencies. This training results in a workforce that has the Foundational and Practitioner skill levels needed for ETM positions. Supplemental training for specific competencies at a higher level of targeted proficiency is available in the form of job-centric credentials (see section 4.1).

All ETM acquisition workforce members are required to meet the Foundational or Practitioner certification standards shown in Figure 3-2 within 3 or 5 years, respectively, from the date of their position assignment.

Courses are listed in the recommended order of completion. DAU recommends students complete ETM 1060 before ETM 2060. All other ETM 1000-level courses are required before their corresponding 2000-level course. After ETM 1040, the remaining ETM 1000-level courses can be completed in any order. In addition, there is no baccalaureate degree requirement for ETM personnel; however, individual occupational series may still have positive degree requirements.

By design, the tier 2 competencies have a one-to-one alignment with the ETM certification courses (i.e., one course per competency) and are addressed at different proficiency levels depending on the certification tier (i.e., Foundational or Practitioner). The full course titles, descriptions, course delivery mode, and course length are listed in Appendix A: ETM Certification Training Courses for both certification tiers. The ETM Foundational curriculum, plus one course in the ETM Practitioner curriculum (i.e., ETM 2060), is delivered asynchronously online. The remaining ETM Practitioner curriculum is taught in a virtual instructor-led environment with real-time instructor facilitation.

To ensure certification currency, acquisition workforce members are required to complete 80 hours of CL every 2 years. The ETM CL Memo recommends CL opportunities that are accessible from DAU to assist the ETM workforce in identifying meaningful developmental activities (DAU, "Functional Area Certification Standards Engineering & Technical Management (Foundational)."). Since a large percentage of the workforce is currently certified, focusing on defense acquisition credentials and supplemental education and training avenues is key to ensure technical superiority.

Engineering and Technical Management (ETM) Functional Area Certification Framework				
Certification Tier	**Foundational** (within 3 years of position assignment)		**Practitioner** (within 5 years of position assignment)	
Description	• Has a basic understanding of the ETM concepts and is developing skills on a routine set of tasks through interactions with skilled workers and on-the-job experiences. At a minimum, has demonstrated the ability to support and assist in ETM activities while interacting with multiple organizations.		• Has a full understanding of the concepts and basic set of skills to perform ETM activities. Has gained knowledge and experience within the ETM community by performing routine tasks with limited supervision. At a minimum, has demonstrated the ability to manage and direct ETM activities while interacting with multiple organizations.	
Education	• No degree requirement (Hiring agencies determine Occupational Series which may have requirements)			
Training	**Type**	**Course Title**	**Type**	**Course Title**
	ACQ Core	• ACQ 1010, Fundamentals of Systems Acquisition Management	**ACQ Core**	• *None*
	ETM Core	• ETM 1040, Technical Management Fundamentals	**ETM Core**	• ETM 2010V, Leading Change for Practitioners
		• ETM 1010, Leading Change Fundamentals		• ETM 2070V, Digital Literacy for Practitioners
		• ETM 1020, Mission & Systems Thinking Fundamentals		• ETM 2080V, Software Literacy for Practitioners
		• ETM 1030, Requirements Definition & Analysis Fundamentals		• ETM 2020V, Mission & Systems Thinking for Practitioners
		• ETM 1050, Design Considerations Fundamentals		• ETM 2030V, Requirements Definition & Analysis for Practitioners
		• ETM 1060, Product Realization Fundamentals		• ETM 2050V, Design Considerations for Practitioners
		• ETM 1070, Digital Literacy Fundamentals		• ETM 2040V, Technical Management for Practitioners
		• ETM 1080, Software Literacy Fundamentals		• ETM 2060, Product Realization for Practitioners
		• ETM 1090, Technical Perspectives on Defense Contracting Fundamentals		• ETM 2090V, Technical Perspectives on Defense Contracting for Practitioners
	Estimated Total Hours: 41 hrs (including ACQ Core Training)		*Estimated Total Hours: 70 hrs*	
Experience	• At least 1 year relevant acquisition experience with evidence of demonstrated proficiency (Awareness) in ETM competencies • Equivalent experience may be considered in government or industry (must be documented and presented in detail)		• At least 4 years relevant acquisition experience with evidence of demonstrated proficiency (Intermediate) in ETM competencies. • Equivalent experience may be considered in government or industry (must be documented and presented in detail)	
Assessment	• No comprehensive exam – test(s) embedded in coursework			
Validation	• Self-nominating process containing evidence of applicable experience over time • Agency/Organization validates completion of above requirements and provides DoD ETM Certification			
Certification Currency	• 80 hours of Continuous Learning (CL)/2 years – in accordance with DoDI 5000.66, Change 3			

Figure 3-4. ETM Certification Framework as of June 24, 2024

4 Execute: Talent Development and Recognition

Defense acquisition credentials and other education and career enrichment opportunities allow the ETM workforce to curate a knowledge base that adapts with evolving technology topics of interest to the Department. In addition, the recognition of significant contributions and accomplishments made by ETM workforce members reinforces the value that the workforce provides.

4.1 Defense Acquisition Credential Development and Status

The goal of certification training is to provide the basic acquisition and functional knowledge needed across all specialties within the ETM workforce. Certification training is intended to be supplemented by defense acquisition credentials. The ETM FAL, in partnership with the ETM FIT and DAU, is developing, deploying, and maintaining credentials to ensure specialized training is available and meets the needs of the widely technically diverse ETM workforce. Credentials provide a documented indicator of an individual's knowledge, skills, and abilities to perform an acquisition-related function and equip workforce members through a set of learning assets or other means of learning and assessments. Credentials consist of two or more learning assets at an intermediate or higher proficiency level along with a capstone project or assessment where students must demonstrate mastery of all prescribed skills.

Figure 4-1 groups the credentials by topic areas that the ETM FAL requested DAU develop. Credential development is prioritized based on the needs of the workforce, specific KLPs listed in Section 1706 of Title 10, U.S.C., and DAU resources. The approach the ETM FAL and DAU are taking is to concentrate on fundamental- and intermediate-level credentials before starting on advanced-level credentials.

The status of each credential in the development process is shown in Figure 4-2. At the time of writing, 11 credentials are in the Analysis/Planning phase when the overall design parameters for a credential are conceptualized, to include where learning asset source material will be derived.

There are four credentials in the Design phase, during which a more detailed breakdown of the design for each individual learning asset within the credential starts to take shape. The 13 credentials in the Development phase include learning assets that are actively being developed and deployed so the workforce may start working toward the credential. A list of currently available learning assets for credentials that have not yet deployed can be found in the Resources section of the SE&A Workforce web page (Systems Engineering and Architecture, "Workforce").

When all learning assets and the capstone for a credential have been deployed, the credential itself is deployed officially and enters the Deployment phase. Currently, 13 credentials have deployed. After being available for a year, credentials move to the Sustainment phase, where they are revalidated on an annual basis for currency and relevance. Seven ETM credentials are in the Sustainment phase. For full descriptions of the deployed credentials, see Appendix B: Deployed ETM Credentials.

ETM CREDENTIALS BY TOPIC AREA			
Secure Cyber-Resilient Engineering (SCRE)	**Digital Engineering**	**Science & Technology Management**	**Software (SW) Engineering**
• **CCYB 001: Program Protection (FY20)** • **CCYB 002A: Cybersecurity for Program Managers (FY21)** • **CCYB 003: Fundamental SCRE (FY24)** • **CCYB 004: Intermediate SCRE (FY24)** • CCYB 005: Advanced SCRE	• **CENG 001: Digital Engineering for DoD Consumers (FY20)** • **CENG XXX: Intermediate Digital Engineering for Systems Engineers*** • CENG XXX: Digital Acquisition	• **CENG 002A: Data Analytics for DoD Acquisition Managers (FY20)** • **CENG 012: Technology Project Management (FY23)** • **CENG 013: Technology Portfolio Management (FY24)**	• **CENG 003: Artificial Intelligence Foundations for the DoD (FY24)** • **CENG 004A: Agile DoD Team Member (FY20)** • CENG 008: Software Engineering Intermediate • CENG 009: Software Engineering Advanced • CENG 010: Software Assurance Intermediate • CENG 011: Software Assurance Advanced • CENG 025: DevSecOps Advanced • **CENG 031: Basics of DoD Software Modernization (FY25)** • **CENG 032: Introduction to DoD DevSecOps*** • **CENG 033: DevSecOps Tool Selection, Pipeline Construction & Management*** • **CENG 034: DevSecOps Continuous Development in DoD*** • **CENG 035: DevSecOps Continuous Delivery in DoD** • **CENG 036: Modern Software Configuration Management Strategies** • **CENG 037: Securing the DevSecOps Pipeline**
Systems Engineering (SE)	**Mission Engineering**	**Manufacturing Engineering**	
• **CENG 016: Intermediate SE Requirements and Architecture*** • CENG 017: Intermediate SE Management • CENG 018: Intermediate SE Product Development • CENG 019: Advanced SE • CENG 030: Human Systems Integration • **CENG 038: Reliability & Maintainability (R&M) Engineering Technical Activities (FY25)** • **CENG 039: Life Cycle R&M Engineering Programmatic Activities (FY25)** • **CENG XXX: Standardization***	• **CENG 005: Fundamental Mission Engineering** • CENG 006: Intermediate Mission Engineering • CENG 007: Advanced Mission Engineering	• **CENG 020: Manufacturing Surveillance** • CENG 027: Manufacturing Readiness Assessment **Quality Assurance** • CENG 014: Quality Management • CENG 015: Process Capability & Control • **CENG 026: Quality Surveillance**	

BLACK BOLD = Has learning assets available *** = Anticipated to deploy by FY26**

BLUE BOLD = Credential deployed

Figure 4-1. ETM Credentials by Topic Area

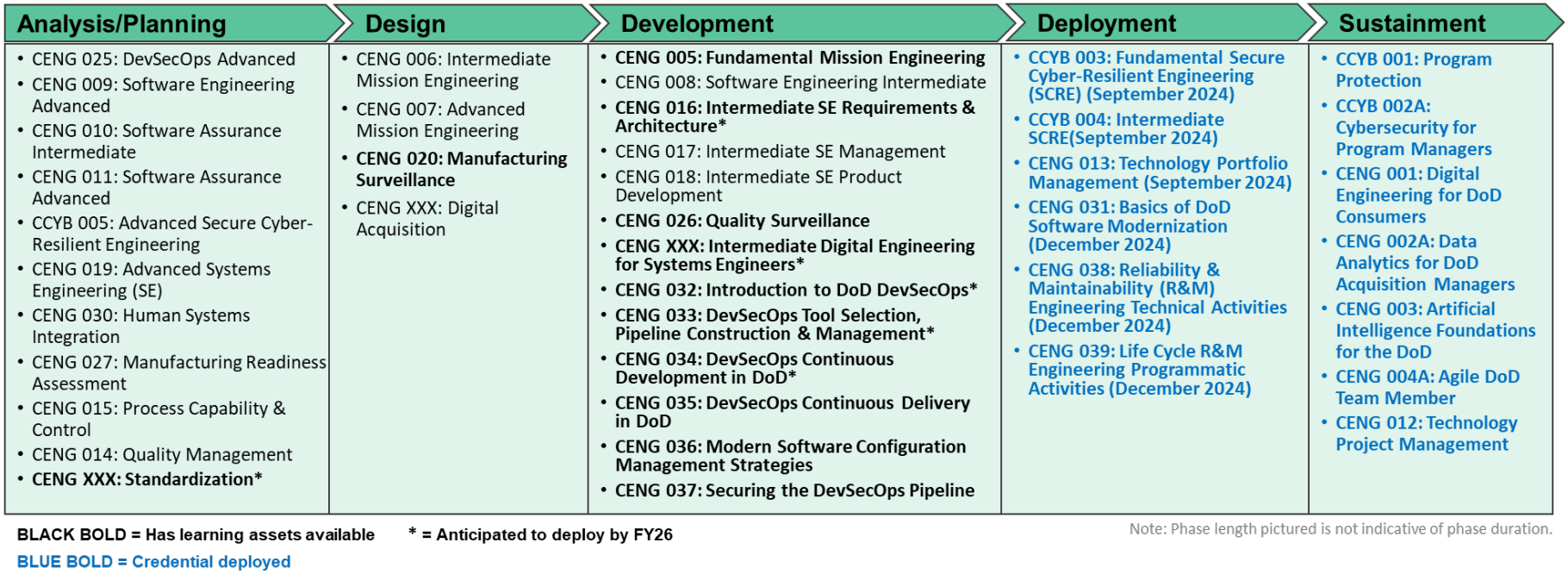

Figure 4-2. ETM Credential Development Status

Table 4-1 provides the number of credentials awarded as of March 31, 2025. The most up-to-date information on available credentials can be found in the credentials section of the DAU interactive catalog (iCatalog).

Table 4-1. Deployed ETM Credential Metrics as of March 31, 2025

Credential	Date Deployed	Number Credentialed
CCYB 001: Program Protection	April 2020	741
CCYB 002A: Cybersecurity for PMs	December 2020	948
CCYB 003: Fundamental Secure Cyber-Resilient Engineering	September 2024	110
CCYB 004: Intermediate Secure Cyber-Resilient Engineering	September 2024	4
CENG 001: Digital Engineering for DoD Consumers	October 2019	1,069
CENG 002A: Data Analytics for DoD Acquisition Managers	August 2020	291
CENG 003: Artificial Intelligence Foundations for the DoD	February 2024	736
CENG 004A: Agile DoD Team Member	October 2019	628
CENG 012: Technology Project Management	April 2023	517
CENG 013: Technology Portfolio Management	September 2024	5
CENG 031: Basics of DoD Software Modernization	December 2024	6
CENG 038: R&M Engineering Technical Activities (Plan, Design, and Procure)	December 2024	21
CENG 039: Life Cycle R&M Engineering Programmatic Activities	December 2024	8

4.2 Education Opportunities

In addition to the credentialing opportunities, many other educational opportunities are available to current and future ETM workforce members. Following are examples.

4.2.1 Defense Acquisition University

DAU's mission is to develop a high-performing defense acquisition workforce through talent management, acquisition training, online resources, and organizational support to deliver effective

and affordable warfighting capabilities. DAU training supports the development of knowledge, skills, and abilities to perform specific functions and tasks related to the acquisition workforce. DAU holds accreditations with the Council on Occupational Education (COE) and the International Accreditors for Continuing Education and Training (IACET). DAU provides a wealth of educational opportunities, including stand-alone training courses, webinars, workshops, the aforementioned defense acquisition credentials, and playlists. Playlists provide curated lists of resources (including stand-alone training courses, webinars, workshops, articles, books, videos, and other reference materials) organized by specific topics and can be found on the DAU website (Defense Acquisition University, Playlists). The DAU iCatalog provides additional information and access to these educational resources.

4.2.2 Academia

The ETM FAL supports the education and knowledge expansion of the workforce by promoting the following key opportunities, which build a talent pipeline and encourage the pursuit of higher education. This list is not exhaustive, as the DoD continues to develop and provide additional educational opportunities for the workforce (DoD Civilian Careers, Students, and Recent Graduates). In addition, Components may offer similar programs to their workforce.

- Advanced Technical Degree Guidebook (2020)

  The Advanced Technical Degree Guidebook was created to assist civilian workforce members to understand the process of selecting, applying, paying for, and attaining an advanced degree within any technical profession (Advanced Technical Degree Guidebook*)*.

- Scholarship for Service Programs

  Scholarships for Service are designed to provide students, at various degree levels, with financial support in exchange for service to the DoD as a civilian employee.

  - Science, Mathematics, and Research for Transformation (SMART) offers scholarships for students pursuing a STEM degree (Department of Defense, Scholarship-for-Service Program).

  - The DoD Cyber Service Academy (formerly the DoD Cyber Scholarship Program) promotes higher education in all disciplines of cybersecurity as a means to prepare the DoD workforce to deal with threats against the Department's critical information systems and networks. This program is also available to active military personnel (DoD Emerging Technologies).

  - CyberCorps Scholarships support education in degree areas relevant to cybersecurity (OPM.gov, CyberCorps).

- Defense Civilian Training Corps (DCTC)

  The DCTC provides a direct pathway to DoD acquisition positions upon graduation. The 2-year program operates similarly to Reserve Officer Training Corps programs, except participants enter civilian careers within the DoD, not active military service (Defense Civilian Training Corps).

- National Defense University is a higher education institute funded by the DoD, with a special focus on educating joint warfighters and other national security leaders in critical thinking and the creative application of military power (National Defense University).

- Pathways Programs

  The Pathways Programs provide two unique civil service entry opportunities: Internship and Recent Graduates (OPM.gov, Students and Recent Grads).

  - Internships are paid work opportunities available to current high school and college students as well as those who have completed qualified career or technical education programs. Some opportunities may convert to permanent positions but are not guaranteed.

  - The Recent Graduates Program is a 1- to 2-year developmental program that promotes Federal Government careers to recent graduates within 2 years of graduation, or up to 6 years for veterans, and can lead to permanent positions.

- National Defense Science and Engineering Graduate (NDSEG) Fellowship Program

  - The 3-year NDSEG Fellowship Program promotes doctoral degree pursuits in designated science and engineering research areas (Systems Plus).

4.2.3 Online Training Resources

Training opportunities are also available through partnerships and knowledge sharing agreements with the following educational providers.

- DAU Commercial Learning Opportunities

  DAU offers training and supplemental resources through several commercial partners at no additional cost to the workforce. All commercial offerings can be accessed through the DAU Virtual Campus (Defense Acquisition University, Virtual Campus).

  - LinkedIn Learning offers an array of online training options in a variety of formats (LinkedIn Learning).

  - Coursera provides access to a range of online learning from world-class universities and companies (Coursera).
  - Harvard Manage Mentor provides online training in business skills as well as an opportunity to engage with a global network of learners (Harvard Manage Mentor).
  - Skillsoft Percipio offers online training coving technology, artificial intelligence, leadership, and business skills as well as compliance and ethics through a variety of training modes (Skillsoft Percipio).

- Digital University, a joint U.S. Air Force and Space Force venture, provides anytime access to Silicon Valley accredited technology training and fosters a community of learners (Digital University).
- Manufacturing x Digital (MxD) is a partnership with the DoD offering virtual training on digital manufacturing and cybersecurity for manufacturing (MxD USA).

4.2.4 Public-Private Talent Experience Program

The Public-Private Talent Experience (PPTE) program allows for the temporary assignment of a DoD employee to a private-sector organization or vice versa. This talent exchange program is a unique way for the Department to acquire new skills and expertise, learn new and best practices, and gain an influx of fresh and innovative ideas. It also encourages talent exchanges with personnel who are working on modernization priorities of the Department (DAU, "What We Do.").

4.2.5 Component-Specific Training

Each Component offers unique training specific to their mission needs and areas of expertise. This training may be a combination of organically developed or outsourced training and is delivered at several proficiency levels to ensure the development of the workforce is comprehensive.

These workforce development activities may also be shared within the DoD and other Components and adopted across the broader workforce.

4.2.6 On-the-Job Training and Development

On-the-job training and development enhance the overall knowledge and experience of the workforce and increase the capability to perform designated job functions.

- Mentorships are a formal or informal relationship between two people. The arrangement involves a mentor, who is typically outside of the employee's supervisory chain, sharing their knowledge, skills, and experience with the mentee, or protégé, to guide improved professional performance, technical competence, personal growth, and career decision making.

- Coaching catalyzes individuals and teams to release their potential and build expertise and confidence through new challenges and experiences. Coaches help employees achieve their goals by questioning to facilitate awareness and self-directed learning.
- Rotational assignments afford employees the opportunity to participate in internal or external career broadening activities over a period of 3 to 6 months. These assignments are designed to foster the development of cross-functional and leadership abilities.
- Workshops are interactive sessions, led by a subject matter expert, structured to develop a specific skill or solve a problem through hands-on activities and collaborative group discussion. They can range from a couple hours to multiple days.
- Apprenticeships provide paid employment in skilled trades and supervised training under actual job conditions. Understanding of the occupation is enhanced through supplemental coursework and instruction (DoD Civilian Careers, Apprenticeships).

4.3 Employee Recognition

While there are many avenues to recognize exceptional work and dedication to the mission, the OUSD(A&S) developed a series of annual individual and team awards specifically to recognize acquisition professionals and teams who make significant contributions across the Department to build enduring advantages and preserve the DoD's competitive edge. The ETM FAL is responsible for recommending winners of:

- The Defense Acquisition Team Award for Software Innovation, which recognizes teams who are driving speed, innovation, and the use of best practices in software development and acquisition.
- The Defense Acquisition Awards for Individual Achievement in the FA categories of
    - ETM (Engineering/Technical), which recognizes the highest levels of demonstrated excellence and professionalism applying mission-level thinking for current and emerging operational and system capabilities to design and develop high-quality, innovative, affordable, supportable, and effective defense systems using an integrated technical approach.
    - ETM (Production/Sustainment), which recognizes the highest levels of demonstrated excellence and professionalism applying manufacturing and quality methods to develop, field, and sustain products and services.

- The Defense Acquisition Awards for Individual Achievement in the cross-functional area categories of
    - Software Development, which recognizes the highest levels of demonstrated excellence and professionalism applying iterative software development methodologies and tools to design, test, deliver, and use software-intensive systems.
    - Value Engineering, which recognizes the use of value engineering principles or methodology that significantly demonstrates achievement of essential functions throughout the DoD at the lowest life-cycle cost, consistent with required levels of performance, reliability, quality, and safety.

Each of these categories is tied to the work accomplished by the ETM workforce (Human Capital Initiatives). In addition, each Component may offer awards to their acquisition professionals in the ETM FA.

5 Enable: Advancing the Workforce

The DoD is focused on attracting the right talent efficiently and effectively. Once the right people are in place, it is imperative to continue building and improving their skill sets. The ETM FAL accomplishes this through the initiatives contained in this report (e.g., credential development) and will continue to reassess how to grow the ETM workforce as the Department's needs evolve. In addition, Congress grants the DoD several authorities to acquire and retain qualified talent. These authorities include direct hiring, enhanced pay, special pay, and incentives.

5.1 Direct Hiring Authorities

Direct hiring authorities (DHAs) are available to expeditiously hire candidates into specific positions when a critical hiring need or severe shortage of candidates exists. DHAs allow Components to non-competitively appoint qualified candidates to competitive service positions in the Department. Some DHAs do not require public notice, a job posting, or consideration for veterans or veterans' preference.

The following are special DHAs for the acquisition workforce and members of the Acquisition Personnel Demonstration Project (AcqDemo[4]) (DAU, "Policy").

The DHAs for the acquisition workforce are:

- Direct Hire Authority for Certain Personnel of the Department of Defense (Section 1109 of NDAA for FY 2020)
- Direct Hire Authority for DoD Post-Secondary and Recent Graduates (Section 1106 of the NDAA for FY 2017; and Section 1102 of the NDAA for FY 2019)

The DHAs for AcqDemo members are:

- Direct Hire Appointment for the Business Management and Technical Management Career Paths
- Veteran Direct Hire Appointments for the Business Management and Technical Management Professional and Technical Management Support Career Paths
- Acquisition Student Intern Appointments
- Scholastic Achievement Appointment

[4] AcqDemo provides the DoD acquisition workforce with an alternative civilian personnel management system to better support DoD's acquisition mission (DAU, "Welcome to AcqDemo.").

Additional DHAs, such as those for STRL Demo[5], are available for positions that may fall under the ETM FA (DAU, HCI Mission Overview per Policy).

5.2 Enhanced Pay Authorities and Special Pay Tables

Enhanced pay authorities and special pay tables are designed and designated to help draw private sector candidates to the DoD by aligning compensation with that of the private sector.

- The Directive-type Memorandum 22-005 – "Enhanced Pay Authority for Certain Acquisition and Technology Positions in DoD" establishes and implements policy and guidance for the use of an enhanced pay authority for covered acquisition and technology positions. Through this authority, DoD Components can competitively recruit or retain individuals exceptionally well-qualified for covered positions that require expertise of an extremely high level in a scientific, technical, professional, or acquisition management field and are critical to the successful development or accomplishment of an important acquisition or technology mission (Under Secretary of Defense for Personnel and Readiness).

- OPM may authorize higher rates of basic pay for nearly any category of employee (i.e., by occupational series, specialty, grade level, and/or geographic area) to address staffing shortages. These rates are set by OPM and follow specific guidance regarding which positions are eligible for the higher pay as well as the locality for the pay rate (OPM.gov, Special Rates).

5.3 Civilian Workforce Incentive Fund

The Civilian Workforce Incentive Fund (CWIF) was developed to attract and retain civilian employees with critical skills in designated "hard-to-fill" positions by providing recruitment, retention, relocation, and student loan repayment incentives. ETM workforce members may be in one of these "hard-to-fill" positions, which are defined within the CWIF guidance as Component-specific mission-critical occupations (MCOs). The amount afforded to the CWIF fluctuates annually; however, historical amounts have been approximately $10M for recruitment, retention, and relocation and another $10M for student loan repayment.

5.4 Future Initiatives and Goals

Future initiatives and goals will be selected based on the evolving needs of the Department's acquisition workforce and in alignment with DoD strategies, policies, and guidance. As new insights on the strategic environment and technological landscape are gained and workforce

[5] DoD Science and Technology Reinvention Laboratories (STRLs) focus on advancing technological capabilities through S&T, to include direct hiring and enhanced pay authorities (Department of Defense, "Science and Technology Reinvention Laboratory Personnel Demonstration Project Program").

feedback continues to illuminate training needs and improvements, the preceding initiatives (sections 2 through 5.4) may be reprioritized or expanded, and new initiatives may be introduced.

The workforce initiatives below are not included in this report but are of interest for future consideration.

- Create additional defense acquisition credentials that offer a greater swath of specialized training topics to address technical skill gaps and ensure a technically competent ETM workforce.

- Analyze student responses to ETM Foundational and Practitioner end-of-course surveys to distill course improvement recommendations and identify any competency gaps. This analysis will help to ensure the certification curriculums remain satisfactory and relevant to students' jobs.

- Conduct a thorough gap analysis in coordination with the Components to gain additional insight into the overall needs for the ETM workforce. Such analysis may allow additional workforce metrics to be captured (e.g., forecasting for loss, ensuring proper headcounts, appropriate training offerings, funding support), strengthening the ETM FAL's ability to address workforce challenges.

- Examine how the ETM workforce may be affected by external factors such as disparities between private sector and civil service opportunities, generational differences, and workforce climate. Understanding the impacts of such unique factors can lead to improvements in the overall health of the ETM workforce.

- Explore establishing work roles, as a collection of competencies and knowledge, skills, abilities, and tasks (KSATs) in DCPDS, for additional workforce functions within the Department (e.g., systems engineering, digital engineering). The expansion of work roles to such functions will create visibility into where work is performed, thereby allowing workforce activities (e.g., recruitment, training, development, and retention) to be targeted to specific positions.

6 Summary

The United States faces a period of accelerated change. To maintain technological advantage, the Department requires a highly skilled, agile, and adaptable ETM workforce to ensure mission success in a landscape dominated by complex software-intensive systems and systems of systems, rapidly emerging technologies, and the escalating complexity of global threats. As the largest acquisition FA, ETM workforce contributions are critical to the DoD developing, fielding, and sustaining high-quality, innovative, affordable, supportable, and effective defense systems. The Department's investment in ETM talent development will ensure a highly skilled and knowledgeable workforce capable of supporting the warfighter over the long term.

The ETM workforce is embracing a career-long learning approach with a streamlined core set of functionally unique training supplemented by credentials that offer in-depth specialty training (e.g., systems engineering, digital engineering, secure cyber-resilient engineering, artificial intelligence, software engineering, mission engineering) at the time it is needed.

The ETM FAL will continue working closely with the Components via the ETM FIT to ensure the health of the current and future ETM workforce. This includes continued development of credentials in support of the workforce's training needs and promotion of various education, recognition, and incentive opportunities outlined herein. This report will be updated when priorities and initiatives affecting the ETM workforce significantly change to support the Department's enduring mission.

Appendix A: ETM Certification Training Courses

Course	Description[6]	Length
ACQ 1010: Fundamentals of Systems Acquisition Management	This Online Training (OLT) course provides a broad overview of the DoD systems acquisition process and covers all phases of acquisitions. It introduces the Joint Capabilities Integration and Development System; the Planning, Programming, Budgeting, and Execution process; DoD 5000 - series policy and procedures documents; and current issues in systems acquisition management. This course is designed for individuals with little or no experience in DoD acquisition management and has proven to be very useful to personnel in headquarters, program management, and functional or support offices.	13 hours
ETM 1010: Leading Change Fundamentals	This is an OLT course. Almost all organizations today confront a relentlessly changing environment. Change is no longer a choice; it's a requirement of doing business. To inspire and manage change is a key job of a leader. Effective change leadership can make the difference between an organization that is caught off guard and forced to react to change, and an organization that is prepared and ready to adapt. In this course, leaders can learn the larger context for change and their role in making it happen. Coach Gary Bolles helps you develop a change mind-set, acquire the right skills, and help individuals and teams across your organization embrace and enact change. Plus, learn how to make a lasting impact by leading large-scale transformations that help solve the problems of today and tomorrow.	1 hour
ETM 1020: Mission and Systems Thinking Fundamentals	This OLT course provides members of the ETM FA with essential foundational knowledge on the universal aspects of approaching technical projects with a mission and systems thinking perspective.	2 hours

[6] Course descriptions are quoted directly from the DAU iCatalog (DAU, iCatalog).

Course	Description[6]	Length
ETM 1030: Requirements Definition and Analysis Fundamentals	This OLT course focuses on the roles of acquisition workforce members serving in engineering, scientific, and technical positions during the requirements definition, requirements analysis, and architecture design processes	1 hour
ETM 1040: Technical Management Fundamentals	This is an entry-level OLT course that introduces students to the eight Technical Management processes of the systems engineering "vee" model. This course provides the essential foundations needed for systems engineers and others to effectively participate in the management of DoD Systems Engineering processes and their related activities.	5 hours
ETM 1050: Design Considerations Fundamentals	This is an OLT course. Learners will explore the 24 Design Considerations at the foundational level. Learners will understand why program teams need to consider and document all statutory and regulatory requirements, as well as other design considerations, to: • Translate the end-user desired capabilities into a structured system of interrelated design specifications that support delivery of required operational capability. • Enable trade-offs among the design considerations in support of achieving desired mission effectiveness within cost and schedule constraints. • Incorporate design considerations into the set of system requirements, as some are mandated by laws, regulations, or treaties, while others are mandated by the domain or DoD Component or Agency; these mandates should be incorporated during the Requirements Analysis process to achieve balance across all system requirements.	6 hours

Course	Description[6]	Length
ETM 1060: Product Realization Fundamentals	Product Realization Fundamentals is an entry-level OLT course that introduces students to basic quality and manufacturing concepts. The course will cover Cost of Quality, Quality Management Systems (QMS), the basics of the two most commonly used QMS (ISO9001 and AS9100), the Manufacturing Plan, Production Planning documents, and an introduction to Additive Manufacturing.	2 hours
ETM 1070: Digital Literacy Fundamentals	This OLT course introduces digital literacy concept and strategies. Students will understand digital behaviors and practices to support implementations of digital concepts. Students gain foundational-level skills to understand the importance of identifying, communicating, and preserving information when operating within a digital environment. Students learn digital approaches that use authoritative sources of systems' data and models as a continuum across disciplines to support life-cycle activities from concept through disposal.	4 hours
ETM 1080: Software Literacy Fundamentals	In this OLT course, we will explore the importance of Software in the DoD and examine the features of a modern software approach in developing software. The DoDI 5000.87, "Operation of the Software Acquisition Pathway," is the foundation for this three-lesson course and is the basis for Lesson 1. The DoD transformation to DevSecOps is the basis for Lesson 2, and the software design considerations of cybersecurity and the resilience of software is the topic for Lesson 3. Overall, this course provides the software literacy foundations needed to operate in a Modern DoD Software Factory/Program environment.	5 hours
ETM 1090: Technical Perspectives on Defense Contracting Fundamentals	This OLT course focuses on the roles of acquisition workforce members serving in engineering, scientific, and technical positions involved with contracts and other acquisition instruments used to procure goods and services throughout the acquisition process.	2 hours

Course	Description[6]	Length
ETM 2010V: Leading Change for Practitioners	This virtual instructor-led training (VILT) course will build on the knowledge and concepts introduced in Leading Change Fundamentals (ETM 1010). Our primary goal will be to identify the rationale to implement change. During the event, participants will create a change plan, give/get feedback on change plans from peers, and discuss some peripheral topics to leading change. Threaded throughout the event, participants will have opportunities to connect with experts and peers.	4 hours
ETM 2020V: Mission and Systems Thinking for Practitioners	This VILT course provides students with the opportunity to apply what they learned in ETM 1020, Mission and Systems Thinking Fundamentals, via several individual and team exercise scenarios. The scenarios allow the student to exercise the universal aspects of approaching technical projects with a mission and systems thinking perspective.	6 hours
ETM 2030V: Requirements Definition and Analysis for Practitioners	This VILT course will build on the knowledge introduced in Requirements Definition and Analysis Fundamentals (ETM 1030). The student will participate in scenario-based exercises to apply principles of requirements definition, requirements analysis, writing good requirements, requirements traceability, and architecture design.	7 hours
ETM 2040V: Technical Management for Practitioners	This VILT course offers an opportunity to apply the concepts covered in ETM 1040, Technical Management Fundamentals, in practical exercise scenarios. The student will evaluate the scenario and implement appropriate Technical Management activities in developing designs, assessing risks, and managing requirements, data, and configurations.	18 hours

Course	Description[6]	Length
ETM 2050V: Design Considerations for Practitioners	This VILT course is on the 24 Design Considerations. Learners will participate in one or more synchronous, instructor-led interventions that will provide instruction, afford learners the opportunity to seek clarity from an instructor, engage in collaborative activities and projects with other learners, and enable learners to receive immediate, constructive feedback.	10 hours
ETM 2060: Product Realization for Practitioners	This OLT course introduces students to common Quality Tools, Process Capability Analysis, and Manufacturing Readiness Assessments using the Manufacturing Readiness Level criteria. Students will apply Quality Tools to demonstrate data-based thinking and problem solving, perform a Process Capability Analysis to determine how well the process meets customer needs, and conduct a partial Manufacturing Readiness Assessment based on a short scenario to identify program risk.	4 hours
ETM 2070V: Digital Literacy for Practitioners	This VILT course builds upon ETM 1070 Digital Literacy Fundamentals. Students learn how to apply digital engineering behaviors and practices to support implementations of digital concepts. Students gain practitioner level skills for identifying, communicating, and preserving information when operating within a digital environment. Students learn how to integrate digital approaches that use authoritative sources of systems' data and models as a continuum across disciplines to support life-cycle activities from concept through disposal. As a group, students discuss best practices and lessons learned that will help them overcome barriers when implementing digital concepts within their own organizations.	5 hours

Course	Description[6]	Length
ETM 2080V: Software Literacy for Practitioners	This blended (OLT and VILT) course provides the learner more in-depth knowledge and skills on aspects of modern software development and deployment. The course provides Performance-Based Training to learners who are looking to use the DoDI 5000.87 Software Acquisition pathway. The course focuses on topics such as modern software requirements management, agile software development that includes cybersecurity design considerations, and how to transition to an Agile-DevSecOps environment to provide capability at the speed of relevance to our warfighters. As a result of taking this course, Learners will transform their thinking to an Agile-DevSecOps mind-set/culture. They will ensure that cybersecurity and resilient software design considerations are included in their Product Backlogs.	9 hours
ETM 2090V: Technical Perspectives on Defense Contracting for Practitioners	This VILT course provides learners with a practitioner level of content focusing on the technical perspective of contracting. Topics covered include: 1. Developing broad technology objectives when contributing to technology development instruments such as Broad Agency Announcements, SBIRs, CRADAs, and grants 2. Providing written technical requirements and technical evaluation criteria when contributing to the creation of acquisition planning documents 3. Providing technical guidance for post award activities such as Quality Assurance Letters of Instruction, Delegations, and the monitoring of contractor performance	7 hours

Appendix B: Deployed ETM Credentials

Credential	Description[7]	Length
CCYB 001: Program Protection	Develop your expertise in preventing, detecting, and managing program protection challenges through this comprehensive training that covers security threats, vulnerabilities, and risk trade-offs. Explore the three pillars of program protection—information, critical technologies, and mission-critical functions—that will allow you to master cybersecurity, anti-tamper tactics, and supply chain risk management countermeasures. You'll learn to craft robust program protection plans using real-world scenarios. You'll also learn how to execute system security engineering actions to safeguard critical program information and trusted systems and networks. By completing the requirements of this credential, you'll strengthen your capacity to serve as a core member of a system security IPT and identify, plan, and execute protection strategies.	30 hours
CCYB 002A: Cybersecurity for PMs	The Cybersecurity for Program Managers Credential enhances the Program Manager's ability to effectively oversee the Cybersecurity effort for an acquisition program. This credential covers the key takeaways and tasks for the Program Manager in the following areas: 1. Developing Cybersecurity requirements in support of the Cyber Survivability Endorsement. 2. Evaluating Cybersecurity Test and Evaluation steps a PM should take for an acquisition program to operate in a cyber-contested environment. 3. Evaluating the work products, documents, and steps that a PM must be involved in to effectively navigate through the six steps of the Risk Management Framework process. 4. Identifying and implementing Information Communications Technology Supply Chain Risk Management practices that should be undertaken throughout the program life cycle. 5. Evaluating contracting statements and analyzing the contracting requirements for the Cybersecurity Maturity Model Certification, Cloud Services, and DevSecOps.	8 hours

[7] Credential descriptions are quoted directly from the DAU iCatalog (DAU, iCatalog).

Credential	Description[7]	Length
CCYB 003: Fundamental Secure Cyber-Resilient Engineering	The Fundamental Secure Cyber Resilient Engineering (SCRE) Credential is designed to equip DoD professionals with a comprehensive understanding of SCRE. This paradigm is crucial for ensuring the resilience of weapon systems, IT systems, and critical infrastructures, enabling them to withstand and operate during cyber-attacks. Upon successful completion of this credential, DoD professionals will be proficient in explaining the foundational principles of SCRE within the DoD. Participants will gain the necessary awareness and insights to specify, design, and implement systems with a focus on protection against threats in contested cyberspace, considering the entire system life cycle. The SCRE credential covers essential concepts and practical applications relevant to DoD professionals in the following areas: 1. Supply Chain Risk Management (SCRM) for Information and Communications Technology: Provides a foundational understanding of the core aspects of SCRM. 2. Software Assurance: Emphasizes the significance of software assurance within DoD programs and products. 3. Cybersecurity and Cybersecurity Risk Management: Delivers a foundational comprehension of the basic principles of cybersecurity and associated risk management in the defense acquisition domain. 4. System Specification and Design for Cyber Protection: Enhances awareness for specifying, designing, and realizing systems while addressing protection concerns in contested cyberspace. This credential ensures that DoD professionals are prepared to address the growing cyber resilience challenges in defense-related engineering and system development.	15 hours
CCYB 004: Intermediate Secure	The Intermediate SCRE Credential employs a multi-faceted, hands-on learning approach, integrating the following components: 1. Mission-Based Cyber Risk Assessment: Learners collaborate in teams to assess cyber threats and countermeasures, applying real-world risk assessment methodologies.	52 hours

Credential	Description[7]	Length
Cyber-Resilient Engineering	2. Cyber Training Ranges: Learners engage in simulated environments focused on understanding offensive cyber-attacks targeting enterprise networks and weapon systems, enhancing their ability to defend critical infrastructures. 3. Model-Based Systems Engineering (MBSE): Learners utilize MBSE principles to gain deeper insights into threats and improve their ability to integrate security and resiliency requirements through adversity-driven engineering practices. Throughout the credential, learners will develop the capability to generate system, communications, and network requirements that accurately reflect the challenges posed by contested cyberspace. They will acquire the necessary skills to craft and evaluate adversity-driven scenarios related to various system operational modes. This evaluation is performed through the application of modeling, simulation, and trade studies, facilitating comprehensive analysis of system behaviors under adversarial conditions. The program is structured around a robust framework that emphasizes understanding systems, missions, architectures, and behaviors. Learners will analyze potential losses, identify applicable remediation strategies, and develop assurance cases to ensure the resilience and security of systems within hostile cyber environments.	
CENG 001: Digital Engineering for DoD Consumers	The Digital Engineering: DoD Consumer credential promotes the learning of key Digital Engineering information and perspectives. It establishes how Models, Simulations, and Digital Engineering can be a benefit over the entire system life cycle and how Models, Simulations, and Digital Engineering can support Systems Engineering processes. It is expected to provide an understanding of the role of Model-Based Systems Engineering, the needs for digital artifacts related standards, how to define a finite set of digital artifacts, and the ability to develop constructs for assembling digital artifacts. In addition, this credential addresses Digital Engineering across the DoD Acquisition Life Cycle and DoD's Digital Engineering fundamentals, strategic goals, and policies. Concepts explored include, but are not limited to, DoD's shift toward an acquisition environment that	26 hours

Credential	Description[7]	Length
	relies on models, simulations, and Digital Engineering that identify with the DoD Digital Engineering Strategy, DoD Digital Engineering Fundamentals, and DoDI 5000.02.	
CENG 002A: Data Analytics for DoD Acquisition Managers	Develop the essential skills to oversee and manage data-centric projects through a combination of commercial online training from Johns Hopkins University, the University of Colorado, and IBM and DAU-authored DoD-specific modules. Created for mid-level acquisition managers across FAs, you'll dive into the fundamentals of data science, methodologies, team building and project management within a DoD context. Emphasis is placed on developing and using data with integrity, conveying the data using data analytics and visualization and using the information to make data-based acquisition decisions. As part of the curriculum, you'll take part in a "Crash Course in Data Science" that emphasizes methodology guidance, provides insights on team development, and reveals practical strategies for effective data analysis management.	39 hours
CENG 003: Artificial Intelligence Foundations for the DoD	This credential trains DoD acquisition professionals to manage Artificial Intelligence (AI) projects with a combination of commercial online training and DoD-specific training. Students will receive a grounding in the topics of AI definitions and technologies, the AI ecosystem, and the importance of data and algorithmic ethics. Capstone exam must be passed to earn this credential. Multiple online DAU courses put this foundation into a DoD acquisition project context, emphasizing DoD's AI Strategy, Responsible AI (RAI) mandate, and how to adapt acquisition phases in alignment with industry best practice and emerging AI statutes, policies, and standards. Focus areas include: • Technologies under the AI umbrella • Strategic planning for AI projects within an ethical RAI framework • How to discern when AI is present in a DoD product or vendor offering • Building AI teams • Importance of using modern software practices	12 hours

Credential	Description[7]	Length
	• Data acquisition for AI • Machine Learning (ML) overview including machine learning operations (MLOps) and data pipeline operations • Emergent information on the new practices of Engineering for AI, Testing AI, and Logistics for AI. The DAU courseware culminates with a recap of where to find help in DoD and professional tips for how to get started with an AI project.	
CENG 004A: Agile DoD Team Member	Enroll in this credential to elevate your knowledge of Agile methodologies, principles, and practices to help you successfully navigate and support agile-driven programs and initiatives within DoD. This collection of virtual and online courses will help you develop an in-depth understanding of Agile values and principles with emphasis on functional roles and interdependencies crucial in capability development using Agile methodologies. You'll also explore the dynamics of successful Agile transformations and how to foster change in cultural mind-sets within organizations. Upon completing this credential, you'll have a thorough understanding of continuous Agile software acquisition, including its benefits, risks, pre-award contracting considerations, and post-award contract management in an agile setting.	24 hours
CENG 012: Technology Project Management	This credential brings together two online training courses to offer an overview of the basics of managing a technology development project. It is designed to provide learners an overarching understanding of the many tasks that must be accomplished to manage such projects so that they result in successful transition to the intended customer. A capstone exercise must be completed to demonstrate the learner's ability to apply what they have learned.	9 hours
CENG 013: Technology Portfolio Management	In this credential you will learn: • About documents that provide guidance for the Department's technology development programs • How an organization's mission and vision shape what it prioritizes • How strategic planning models are used to guide how it applies its resources	24 hours

Credential	Description[7]	Length
	• How an organization aligns itself with its strategic goals • How innovation is key to successful technology development • How technology roadmaps are used to provide structure to development efforts • Best practices in developing and prioritizing technology portfolios These skills are vital for individuals who are involved with managing technology portfolios. You will work through case studies that enable you to demonstrate your ability to analyze and make decisions on complex technology portfolios.	
CENG 031: Basics of DoD Software Modernization	Welcome to the Basics of Software Modernization in DoD. This credential introduces you to the basic concepts of Agile and DevSecOps. The credential focuses on the modern approach to software development DoD needs to achieve software development capability at the speed of relevance. There is a four (4) hour instructor-led session where you will practice thinking through how to transition a DoD program into a modern software development program. This credential also provides a hands-on learning experience.	20 hours
CENG 038: R&M Engineering Technical Activities (Plan, Design, and Procure)	The R&M Engineering Technical Activities (Plan, Design, and Procure) credential promotes the learning of key Reliability & Maintainability (R&M) Engineering information and perspectives. You will learn how to conduct R&M engineering planning activities across the acquisition life cycle. Starting in the Materiel Solution Analysis phase, students will develop R&M requirements. As systems mature through the acquisition process, students will develop R&M planning documents including reliability growth curves and other R&M planning products. In addition, this credential addresses R&M Engineering across the DoD Acquisition Life Cycle and DoD's Digital Engineering fundamentals, strategic goals, and policies. Concepts explored include, but are not limited to, the process of providing R&M requirements and provisions in procurement requests, requests for proposals, contracts, and exhibits. As systems mature through the acquisition process, students will develop R&M inputs to procurement documents and review the contractor's responses in proposals and negotiated contracts.	18 hours

Credential	Description[7]	Length
CENG 039: Life Cycle R&M Engineering Programmatic Activities	The R&M Engineering Programmatic Activities credential promotes the learning of key Reliability & Maintainability Engineering information and perspectives. You will learn activities and data that is required to support the program and technical reviews during the life cycle phases of DoD defense acquisition programs. These reviews are used as decision points and to control R&M requirements during acquisition program. Product Support management is the organization and coordination of life cycle activities, products, processes, and data required to achieve defined program supportability cost, schedule, and performance objectives.	20 hours

Acronyms

AcqDemo	Acquisition Personnel Demonstration Project
CL	Continuous Learning
COE	Council on Occupational Education
CWIF	Civilian Workforce Incentive Fund
DAU	Defense Acquisition University
DCTC	Defense Civilian Training Corps
DCPDS	Defense Civilian Personnel Data System
DHA	Direct Hire Authority
DoD	Department of Defense
DoDI	Department of Defense Instruction
ETM	Engineering and Technical Management
FEVS	Federal Employee Viewpoint Survey
FA	Functional Area
FAL	Functional Area Leader
FIT	Functional Integration Team
IACET	International Accreditors for Continuing Education and Training
KLP	Key Leadership Position
KSAT	Knowledge, Skills, Abilities, and Tasks
MxD	Manufacturing x Digital
NDSEG	National Defense Science and Engineering Graduate
OASD	Office of the Assistant Secretary of Defense
OPM	Office of Personnel Management
PCD	Position Category Description
PPTE	Public-Private Talent Experience
SCRE	Secure Cyber-Resilient Engineering
SE	Systems Engineering
SE&A	Systems Engineering and Architecture
SHCP	Strategic Human Capital Planning

SMART	Science, Mathematics, and Research for Transformation
STEM	Science, Technology, Engineering, and Mathematics
STRL	Science and Technology Reinvention Laboratory
USD(A&S)	Under Secretary of Defense for Acquisition and Sustainment
USD(P&R)	Under Secretary of Defense for Personnel and Readiness
USD(R&E)	Under Secretary of Defense for Research and Engineering
WMG	Workforce Management Group

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