SYSTEMS ENGINEERING & ARCHITECTURE

ENGINEERING & TECHNICAL MANAGEMENT (ETM) WORKFORCE DEVELOPMENT

ETM

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. The role requires developing and implementing products and services with an integrated technical approach across the total life cycle. The role 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.

❖ WORKFORCE DEVELOPMENT

The DoD is investing in the existing workforce by developing and modernizing training and education. Training addresses technical skills needed to transition technology into usable capabilities. The Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)) technical workforce development efforts are guided by Secretary of Defense priorities. OUSD(R&E), ETM workforce leaders from across the Department, and the Defense Acquisition University (DAU) collaborate to develop competencies, training, and credentials for the ETM workforce.

Defend the Nation
Innovate and Modernize the DoD
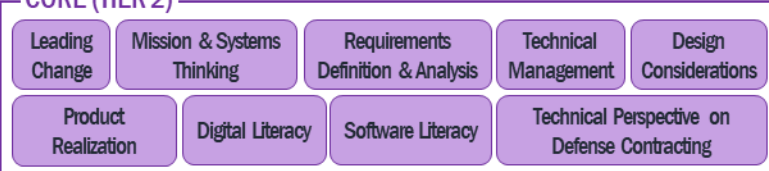
Take Care of Our People
Grow Our Talent

Succeed Through Teamwork
Build Unity Within the DoD

❖ TRAINING

The ETM workforce progresses through training based on targeted proficiency levels for ETM competencies. The

ETM COMPETENCIES

CORE (TIER 2)

Leading Change	Mission & Systems Thinking	Requirements Definition & Analysis	Technical Management	Design Considerations
Product Realization	Digital Literacy	Software Literacy	Technical Perspective on Defense Contracting	

SPECIALTY (TIER 3)

Technology Portfolio Management	Mission Engineering Approach	Mission Engineering Documentation	Systems Engineering Management	Technology Transition/ Transfer
Stakeholder Requirements Definition	Requirements Analysis	Implementation	Integration	Facilities
Verification & Validation	Transition	System of Systems / Family of Systems	Architecture Design	Software Assurance
Cyber Acumen for Engineering	Adversity-Driven Requirements Derivation	Analysis of Adversity & Adverse Effects	Adversity-Driven Design	Technology Protection
Adversity-Driven Design Realization	Industrial Workforce Planning	Quality Management	Materials Management	DevSecOps
Software Engineering/ Design	Digital Environment Development	Digital Environment Operations & Support	Process Capability & Control	Technology & the Industrial Base
Modeling, Simulation, & Analysis	Manufacturing Planning, Scheduling, & Control	Software Configuration Management	Surveillance Activities	
Adversity-Driven Test, Evaluation, Verification, & Validation		Mission Capability Analysis, Definition, & Characterization		

ETM TRAINING

FOUNDATIONAL	PRACTITIONER
ACQ 1010 Fundamentals of System Acquisition Management	**ETM 2010** Leading Change for Practitioners
ETM 1040 Technical Management Fundamentals	**ETM 2070** Digital Literacy for Practitioners
ETM 1010 Leading Change Fundamentals	**ETM 2080** Software Literacy for Practitioners
ETM 1020 Mission & Systems Thinking Fundamentals	**ETM 2020** Mission & Systems Thinking for Practitioners
ETM 1030 Requirements Definition & Analysis Fundamentals	**ETM 2030** Requirements Definition & Analysis for Practitioners
ETM 1050 Design Considerations Fundamentals	**ETM 2050** Design Considerations for Practitioners
ETM 1060 Product Realization Fundamentals	**ETM 2040** Technical Management for Practitioners
ETM 1070 Digital Literacy Fundamentals	**ETM 2060** Product Realization for Practitioners
ETM 1080 Software Literacy Fundamentals	**ETM 2090** Technical Perspectives on Defense Contracting for Practitioners
ETM 1090 Technical Perspectives on Defense Contracting Fundamentals	

Complete Remaining 1000-level Courses in Any Order

Green = Online Training (OLT)
Blue = Virtual Instructor-led Training (VILT)

USDR&E

TECHNICAL WORKFORCE HIGHLIGHT:
ETM WORKFORCE DEVELOPMENT cont'd

❖ CREDENTIALS

Defense acquisition credentials:

- Provide job-specific, specialty, and point-of-need training;
- Allow the workforce to customize their knowledge base throughout their career; and
- Are transferable across Components.

OUSD(R&E) is collaborating with the DAU, Military Services, and Defense agencies to develop over 25 credentials applicable to the ETM workforce. Several ETM and interdisciplinary credentials are already available with more on the way. Credentials currently available can be accessed here: https://icatalog.dau.edu/onlinecatalog/tabnav_credentials.aspx

ETM CREDENTIALS CURRENTLY AVAILABLE

- Program Protection
- Cybersecurity for Program Managers
- Digital Engineering for DoD Consumers
- Data Analytics for DoD Acquisition Managers
- Agile DoD Team Member
- Technology Project Management

Supplemental training is available in the form of job-centric credentials.

Artificial Intelligence	Secure Cyber-Resilient Engineering	Quality Surveillance	Manufacturing Surveillance	DevSecOps	
• SWE 0056 What Is Artificial Intelligence • SWE 0057 What Is Machine Learning • HOS 0036 AI for Everyone • SWE 0058 Overview of AI in the DoD • HOS 0037 AI Algorithms Models & Limitations • HOS 0038 AI Data Fairness & Bias • HOS 0039 AI Privacy & Convenience • HOS 0040 AI Ethics in Action	• CLE 074 Cybersecurity Throughout DoD Acquisition • CLE 080 Supply Chain Risk Management (SCRM) for Information & Communications Technology • ENG 0810 Software Assurance Awareness • CYB 5610 Cybersecurity & Resiliency for Weapons, Control, & IT Systems	• CME 130 Surveillance Implications of Manufacturing & Subcontractor Management • CMQ 100 Quality Assurance Basics • CMQ 131 Data Collection & Analysis • CMQ 220 Root Cause Analysis • PMT 0170 Risk Management	• CLC 043 Defense Priorities & Allocations System • CME 103 Manufacturing & Delivery Surveillance • CME 130 Surveillance Implications of Manufacturing & Subcontractor Management • CMQ 131 Data Collection & Analysis • CMQ 220 Root Cause Analysis • PMT 0170 Risk Management	• HOS 0022 Set up a Continuous Integration (CI) workflow in CircleCI • HOS 0023 Jenkins: Automating your delivery pipeline • HOS 0024 Build local development environments using Docker containers • HOS 0025 Selenium Test Execution on Docker Containers • HOS 0026 Test Driven Development in Java for Beginners • HOS 0027 Manage your versions with Git I • HOS 0028 Manage your versions with Git II • HOS 0029 Building Test Automation Framework using Selenium & TestNG • HOS 0030 Create your First Automate Script using Selenium & Java • HOS 0034 – What is Scrum • HOS 0041 Manage Agile Workflows with Product Roadmaps in Miro • HOS 0048 Agile Projects Developing Tasks with Taiga • HOS 0049 Monitoring & Telemetry for Production Systems by creating Dashboards using Prometheus & Grafana - Part I • SWE 0001 Planning for Spikes • SWE 0002 Software Modernization Elements • SWE 0005 Software Modernization Operational Advantages • SWE 0006 Software Modernization Strategies • SWE 0007 Introduction to Modern Software Reuse • SWE 0009 Contracting for Agile Development • SWE 0010 Agile DevSecOps Team Roles & Responsibilities • SWE 0013 Agile Organizational Optimization • SWE 0014 User Story Construction • SWE 0015 Intro: What Is DoDI 5000.87 • SWE 0016 Capability Needs Statement • SWE 0017 Value Assessment (5000.87) • SWE 0019 Agile Backlog Refinement • SWE 0024 Sustainable Pace	• SWE 0025 Iteration & Release Retrospective • SWE 0026 DevSecOps • SWE 0027 Principles of DevSecOps • SWE 0028 Software Technical Currency • SWE 0029 Continuous Delivery/Deployment (CD) • SWE 0032 Product Roadmap • SWE 0042 Tempo & Stability • SWE 0046 DoD Modern Software Reuse • SWE 0049 What is Open-Source Software • SWE 0050 Build a Product Vision • SWE 0051 Developing Software Product Lines • SWE 0052 Build a Release Plan • SWE 0053 End User Agreement • SWE 0054 Software Initial Capability Document • SWE 0055 Kanban Board • SWE 0074 Strangler Pattern • SWE 0079 Software Security Test Tools • SWE 0097 What is Speed of Relevance for the DoD • SWE 0098 Benefits of Agile for DoD Acquisition • SWE 0099 Setting up an Agile Project • SWE 0100 Relative Effort Estimation for Agile Projects • SWE 0102 Introduction to Cloud Services • SWE 0103 What is a Service Mesh • SWE 2002 What Is a Software Development Plan • SWE 2003 Scaled Agile • SWE 2006 What Is eXtreme Programming (XP) • SWE 2014 Configuration as Code (CaC) • SWE 2015 Security as Code (SaC) • SWE 2016 Infrastructure as Code (IaC) • SWE 2025 Value Stream Mapping • SWE 2030 What Is Agile • SWE 2031 What Agile Means for the Defense Acquisition Workforce • SWE 2040 Application of Agile • SWE 2046 What is a Container • SWE 2047 DevSecOps Terminology • SWE 2048 GitOps • SWE 2060 What is a Microservice
Applying STAT	**Cyber T&E**	**Mission Engineering**	**Intermediate SE Requirements & Architecture**		
• CLE 035 Introduction to Probability & Statistics • HOS 0055 Experimental Design Basics • HOS 0056 Factorial & Fractional Factorial Design	• CLE 074 Cybersecurity Throughout DoD Acquisition • CYB 0030 Introduction to Cyber Attack Kill Chain • CYB 5630V Cyber Table Top • CYB 5640 Cyber Training Range	• ETM 1020 Mission & Systems Thinking Fundamentals • ETM 1030 Requirements Definition & Analysis Fundamentals	• ENG 1110 Stakeholder Requirements		

> This table includes a list of learning assets by topic area that are available to the workforce for ETM and interdisciplinary credentials that are currently in development. Visit DAU's Course Catalog to register: https://icatalog.dau.edu/onlinecatalog/tabnavlas.aspx

Orange = ETM Credential Assets | **Gold** = Interdisciplinary Credential Assets

TYPICAL ROLES

ETM workforce members hold a variety of positions that may include, but are not limited to, Engineer/Chief Engineer, Architect, Software Developer, Specialist (Quality, Reliability, etc.), Production Controller, Researcher/Scientist, Technical Management, and Analyst.

For more information, visit https://www.cto.mil/sea/workforce/ or email osd-sea@mail.mil, ATTN: Workforce