



Back-to-Basics
Empowering the Defense Acquisition Workforce

**Engineering and Technical Management
(ETM) and Test & Evaluation (T&E)
Functional Areas and Back-to-Basics
Acquisition Workforce Transformation**

6/8/2021

Office Reviewed By:
OUSD(R&E)/AC/Eng



BtB Transformation Milestones

- **May 2020** – Deputy Director for Engineering (DD, Eng) initiated two task force teams (ETM and T&E) to develop and recommend a new DAWIA certification model for their respective functional areas
- **Nov 2020** – DD, Eng approved the ETM and T&E Task Forces' respective outputs:
 - Streamlined competency model
 - Two-level certification framework
 - Initial set of proposed credential topics
- **Jan 2021** – ETM and T&E Task Forces' recommendations submitted to WLT
- **Apr 2021** – ETM and T&E submitted Functional Area transition plans to HCI



Engineering and Technical Management (ETM) Functional Area



ETM Certification Comparison

	Outgoing (ENG)	New (ETM – effective 1 Oct 2021)
Structure	Three Levels	Foundational and Practitioner
Education	Baccalaureate or graduate degree in technical or scientific field	No degree required for certification (Hiring agencies determine Occupational Series which may have requirements)
Training	ENG Competencies and Acquisition Core Training (Levels I and II)	Acquisition Core Training (Foundational only) and ETM Competencies
Experience	1 year (Level I), 2 years (Level II), 4 years (Level III)	Foundational: 1 year of acquisition experience in ETM Practitioner: 4 years of acquisition experience in ETM
Assessment	No comprehensive exam	No change
Validation	Agency/organization validates completion of certification requirements	No change
Currency	80 hours/2 years – ref DoDI 5000.66	No change for 80 hours Continuous Learning/2 years



ETM Certification

	ETM Certification Requirements
Education	No degree required for certification (Hiring agencies determine Occupational Series which may have requirements)
Training	Acquisition and ETM Competencies <ul style="list-style-type: none"> • Foundational – ACQ 1010, ETM 1010, ETM 1020, ETM 1030, ETM 1040, ETM 1050, ETM 1060, ETM 1070, ETM 1080, ETM 1090 • Practitioner – ETM 2010, ETM 2020, ETM 2030, ETM 2040, ETM 2050, ETM 2060, ETM 2070, ETM 2080, ETM 2090
Experience	<ul style="list-style-type: none"> • Foundational – At least 1 year relevant acquisition experience with evidence of demonstrated proficiency (awareness/basic) in ETM competencies • Practitioner – 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 examination – test(s) embedded in coursework
Validation	Agency/organization validates completion of above requirements and provides certification
Currency	<ul style="list-style-type: none"> • 80 hours of Continuous Learning (CL)/2 years – in accordance with DoDI 5000.66
Transition Plan	Workforce members currently DAWIA certified in: <ul style="list-style-type: none"> • ENG, IT, S&TM, PQM Level I – conversion to Foundational • ENG, IT, S&TM Level II – conversion to Practitioner; PQM Level II – conversion to Foundational • ENG, IT, S&TM, PQM Level III – conversion to Practitioner



ETM Competency Model

Tier 2: ETM Core Readiness Competencies

Leading Change	Mission & Systems Thinking	Requirements Definition & Analysis	Technical Management	Design Considerations	Product Realization	Digital Literacy	Software Literacy	Technical Perspective on Defense Contracting
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Tier 3: ETM Specialty Competencies

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

Note: Each competency is substantiated with sub-competencies and task statements



ETM New Certification Courses

ETM Foundational Certification Courses		
Course	Title	Length (hrs)
ACQ 1010	Fundamentals of Systems Acquisition Management	13
ETM 1010	Leading Change Fundamentals	1.5
ETM 1020	Mission and Systems Thinking Fundamentals	1.5
ETM 1030	Requirements Definition and Analysis Fundamentals	2
ETM 1040	Technical Management Fundamentals	6
ETM 1050	Design Considerations Fundamentals	4
ETM 1060	Product Realization Fundamentals	2
ETM 1070	Digital Literacy Fundamentals	2.5
ETM 1080	Software Literacy Fundamentals	3
ETM 1090	Tech Perspectives on Contracting Fundamentals	2
Total Projected Course Hours		37.5

ETM Practitioner Certification Courses		
Course	Title	Length (hrs)
ETM 2010	Leading Change for Practitioners	2
ETM 2020	Mission and Systems Thinking for Practitioners	4
ETM 2030	Requirements Definition and Analysis for Practitioners	6.5
ETM 2040	Technical Management for Practitioners	12.5
ETM 2050	Design Considerations for Practitioners	10
ETM 2060	Product Realization for Practitioners	6.5
ETM 2070	Digital Literacy for Practitioners	4.5
ETM 2080	Software Literacy for Practitioners	5
ETM 2090	Tech Perspectives on Contracting for Practitioners	4
Total Projected Course Hours		55



ETM Credentials

ETM INITIAL CREDENTIAL TOPICS

Systems Engineering	Science & Technology Management	Manufacturing Engineering	Quality Assurance
Digital Engineering for Technical Workforce	Secure Cyber-Resilient Engineering	Mission Engineering	Software Engineering

- **Available Credentials** (<https://www.dau.edu/training/pages/credentials.aspx>)
 - CENG 001 – Digital Engineering for DoD Consumers
 - https://icatalog.dau.edu/onlinecatalog/CredentialConceptCard.aspx?crs_id=4
 - CCYB 001 – Program Protection
 - https://icatalog.dau.edu/onlinecatalog/CredentialConceptCard.aspx?crs_id=5



ETM Information Resources

- Additional resources/information available on Advanced Capabilities website
 - ETM & T&E Workforce Information: <https://ac.cto.mil/workforce/>
 - Engineering & T&E Policy and Guidance: <https://ac.cto.mil/erpo/>



Test and Evaluation (T&E) Functional Area



T&E Certification Comparison

	Outgoing	New (effective 1 Oct 2021)
Structure	Three Levels	Foundational and Practitioner
Education	Associate degree (Level I); Baccalaureate degree (Level II); Baccalaureate or graduate degree (Level III)	No degree required for certification (Hiring agencies determine Occupational Series which may have requirements)
Training	T&E Core Competencies and Acquisition Core Training (Levels I and II)	T&E and Acquisition Core Competencies
Experience	1 year (Level I), 2 years (Level II), 4 years (Level III)	Foundational: 1 year of acquisition experience in test and evaluation Practitioner: 4 years of acquisition experience in test and evaluation
Assessment	No comprehensive exam	No change
Validation	Agency/organization validates completion of certification requirements	No change
Currency	80 hours/2 years – ref DoDI 5000.66	No change for 80 hours Continuous Learning/2 years



T&E Certification

	T&E Certification Requirements
Education	No degree required for certification (Hiring agencies determine Occupational Series which may have requirements)
Training	T&E and Acquisition Core Competencies <ul style="list-style-type: none"> • Foundational – ACQ 1010, TST 102, ENG 101 (or equivalent) • Practitioner – ACQ 2020, ACQ 2030/V, TST 204/V, ENG 201 (or equivalent)
Experience	<ul style="list-style-type: none"> • Foundational – At least 1 year relevant acquisition experience with evidence of demonstrated proficiency (awareness/basic) in T&E competencies • Practitioner – At least 4 years relevant acquisition experience with evidence of demonstrated proficiency (intermediate) in T&E competencies
Assessment	No comprehensive examination – test(s) embedded in coursework
Validation	Agency/organization validates completion of above requirements and provides certification
Currency	<ul style="list-style-type: none"> • 80 hours of Continuous Learning (CL)/2 years – in accordance with DoDI 5000.66
Transition Plan	Workforce members currently DAWIA certified in T&E: <ul style="list-style-type: none"> • Level I – Conversion to Foundational • Level II – Conversion to Practitioner • Level III – Conversion to Practitioner



T&E Competency Model

Tier 2: T&E Core Readiness Competencies

TECHNICAL	Risk Identification	Capabilities Assessment	Program T&E Strategy Development	Test Cost Estimating	Coordination of T&E Activities & Events
	Test Readiness	Risk Management	Test Control Management	Data Management	Data Verification & Validation
	Data Reduction & Assimilation	Determination of Test Adequacy	Validation of Test Results	Evaluative Conclusions	Technical Reviews
	Lessons Learned	Documentation			
PROFESSIONAL	Customer Service	External Awareness	Flexibility	Communication	Technical Credibility
	Critical Thinking	Professional Ethics	Leadership & Management		

Note: Each tier 2 competency is substantiated with sub-competencies and task statements



T&E New Certification Courses

T&E Foundational Certification Courses		
Course	Title	Length (hrs)
ACQ 1010	Fundamentals of Systems Acquisition Management	13
TST 102	Fundamentals of Test and Evaluation	15
ENG 101 (or equivalent)*	Fundamentals of Systems Engineering (T&E Focus)	14
Total Projected Course Hours		42

T&E Practitioner Certification Courses		
Course	Title	Length (hrs)
ACQ 2020	Intermediate Systems Acquisition, Part A	25
ACQ 2030/V	Intermediate Systems Acquisition, Part B	29
TST 204/V	Intermediate Test and Evaluation	72
ENG 201 (or equivalent)*	Applied Systems Engineering in Defense Acquisition, Part I (T&E Focus)	9
Total Projected Course Hours		135

* DAU reviewing the ENG 101 and ENG 201 to identify the relevant material for the T&E workforce – courses may be combined into one ENG course for T&E. To support the current implementation plans for Oct 1, current ENG 101 & 201 will be available until an equivalent course(s) can be finalized.



T&E Credentials

T&E Initial Proposed Credential Topics

Applying Scientific Test & Analysis Techniques (STAT)	Interoperability Testing	Test Event Planning & Execution
Chemical, Biological, Radiological and Nuclear Defense (CBRN) T&E	T&E and Tracking Reliability (Reliability Growth Curve)	Safety, Environmental, and Quality/Mission Assurance for T&E
Current Changes in T&E	T&E of Software	Space (Satellite and Ground Support) Systems T&E
Cybersecurity T&E	T&E of Artificial Intelligence	Digital Engineering (Existing DAU Credential)
Evaluating Data	T&E of Autonomous Systems	
Evaluation Frameworks & Identifying Integrated Testing Opportunities	T&E Strategy Development and Planning	

- **Available Credential** (<https://www.dau.edu/training/pages/credentials.aspx>)
 - CENG 001 – Digital Engineering for DoD Consumers
 - https://icatalog.dau.edu/onlinecatalog/CredentialConceptCard.aspx?crs_id=4



T&E Information Resources

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