TRAIN THE TRAINER

T3-I

T3-I — INSTRUCTOR CERTIFICATION · MAVEN SMART SYSTEM (MSS)

Train-the-Trainer Manual

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T3-I — INSTRUCTOR CERTIFICATION · MAVEN SMART SYSTEM (MSS)

Forward: T3-I certifies MSS instructors. It formalizes the instructor development pipeline into a structured course covering adult learning principles, platform deep-dive for instruction, lab facilitation, assessment design, Go/No-Go standardization, and common trainee error management. Graduates enter the supervised practicum (Phase 2) and, upon completion, are authorized to teach independently. **Prereqs:** SL 3, Advanced Builder (Go on file); C2DAO Training OIC selection; CONCEPTS_GUIDE_T3I_INSTRUCTOR_CERTIFICATION (read before this manual). *HQ USAREUR-AF · v1.0 · 2026 · DISTRIB: USG only · AUTH: C2DAO/UDRA v1.1*

WARNING

Instructor quality directly affects operational data quality across USAREUR-AF. An MSS data product built by a trainee is only as good as the instruction they received.

CHAPTER 1 — INTRODUCTION: THE MSS INSTRUCTOR

1-1. Instructor Certification Manual

BLUF: T3-I transforms a qualified MSS operator into a qualified MSS instructor. It replaces the previous ad-hoc 4-phase apprenticeship with a structured, documented certification pathway.

This manual provides the reference material for the T3-I course. It covers everything an instructor candidate needs to understand the MSS training program, develop instructional competency, and prepare for the supervised practicum.

T3-I covers adult learning principles applied to technical training (andragogy, experiential learning cycle, scaffolding); MSS platform deep-dive from the instructor perspective — every SL 1 through SL 3 lab exercise, common break points, access issues; lab facilitation techniques including managing heterogeneous skill levels, pacing, and dead time elimination; assessment and evaluation design (T&EO structure, Go/No-Go standardization, evaluator calibration); common trainee error taxonomy (the top 10 errors by course level, root causes, intervention techniques); instructor performance standards (the 7

observation criteria from FDP §6-1); pre-course administration (environment setup, access provisioning, material preparation); and lesson improvement process (identifying gaps, proposing revisions, version control).

T3-I does NOT cover domain-specific content for SL 4/SL 5 courses (domain qualification is a separate prerequisite per FDP §2-1); C2DAO SME designation — see C2DAO SME Designation Rubric; Unit Data Trainer certification — see T3-F (MSC Force Multiplier); or curriculum design from scratch (T3-I teaches instructors to deliver and improve existing curriculum, not to author new courses).

NOTE

T3-I is a two-phase program. Phase 1 (5 days classroom) is delivered as a formal course. Phase 2 (supervised practicum) is scheduled separately around actual course iterations. This manual covers Phase 1 content. Phase 2 procedures are documented in Chapter 7.

GOVERNANCE: The Faculty Development Plan (FDP) establishes the overarching 4-phase instructor certification lifecycle (Audit → Assistant → Lead Observed → Certification). T3-I implements FDP Phases 2-4 through its 2-phase delivery structure. See FDP §3-3 for the phase reconciliation mapping. The FDP remains the authoritative governance document for instructor qualification standards, sustainment requirements, and performance standards.

1-2. The Instructor in the MSS Ecosystem

The MSS Training Program is a tiered, progressive curriculum spanning SL 1 (Maven User) through SL 5 (Advanced Specialist). Instructors are the primary mechanism for quality assurance across this entire chain. Every Go/No-Go decision an instructor makes determines whether a person enters the operational data ecosystem with the skills to contribute — or the gaps to cause harm.

The training program operates in a geographically distributed theater (USAREUR-AF across Europe). Instructors travel with the MTT, deliver courses at MSC locations, certify Unit Data Trainers, and maintain training standards across a theater where no two sites have identical infrastructure, connectivity, or personnel tempo.

Instructor tier structure:

Tier	Role	Path
Instructor	Deliver assigned courses; conduct Go/No-Go evaluations	T3-I Go + domain qualification
Senior Instructor	Certify new instructors; approve lesson plan revisions	Instructor + 12 months + 4 iterations + OIC recommendation
Master Instructor	Certify Senior Instructors; approve curriculum changes; delegate certification authority	Senior + 24 months + 2 cross-certs + 2 mentored candidates + OIC designation

See Instructor Tier Definitions for full criteria.

1-3. Prerequisites and Entry Standards

Prerequisite	Requirement
SL 3 Go	On file with C2DAO. SL 3 is the minimum operational qualification — it ensures the candidate can build on MSS, not just use it.
C2DAO Selection	The C2DAO Training OIC selects instructor candidates based on operational need, platform proficiency, and demonstrated aptitude for instruction. Self-nomination is permitted but selection is not guaranteed.
Domain Qualification	Not required for T3-I entry, but required before independent teaching assignment. See FDP §2-1 for domain requirements by course level.
Pre-Course Reading	CONCEPTS_GUIDE_T3I_INSTRUCTOR_CERTIFICATION (complete before Day 1)

CHAPTER 2 — ADULT LEARNING PRINCIPLES

2-1. Why This Matters

MSS trainees are adults — military and Civilian professionals with operational experience, existing mental models, and immediate performance requirements. They are not cadets in a schoolhouse. The instructional approach must account for how adults actually learn technical skills.

2-2. Andragogy vs. Pedagogy

Malcolm Knowles identified six principles of adult learning that directly apply to MSS instruction:

Principle	Application to MSS Training
Need to Know	Adults need to know why they are learning something before they engage. Every block of instruction must begin with operational context: "Here is the mission problem this skill solves."
Self-Concept	Adults resist being treated as dependent learners. Lab-heavy instruction works because it puts the trainee in control. Lectures where the trainee passively watches the instructor build are the weakest delivery method.

Principle	Application to MSS Training
Experience	Adults bring operational experience. Use it. Ask the Intel analyst how they currently track CCIRs before showing them the MSS way. Build on what they know.
Readiness	Adults learn what they need to learn for their current role. SL 4 WFF tracks succeed because the content maps directly to the trainee's job.
Orientation	Adults are problem-oriented, not subject-oriented. Frame every exercise as a problem to solve, not a feature to learn.
Motivation	Adults are motivated by internal factors (competence, job performance) more than external ones (grades, rankings). Go/No-Go evaluations work because they certify operational competence, not academic achievement.

2-3. The Experiential Learning Cycle (Kolb)

MSS instruction follows the Kolb cycle for every major skill:

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Concrete Experience     →  The trainee does the task (lab exercise)
         ↓
Reflective Observation  →  The trainee reviews what happened (check-on-learning)
         ↓
Abstract Conceptualization → The instructor connects the experience to the concept
         ↓
Active Experimentation  →  The trainee applies the concept to a new scenario
(practical exercise)
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Implication for instructors: Do not start with the concept and then do the lab. Start with the lab (or a demonstration), let the trainee experience the skill, then explain the underlying principle. The concept sticks because the trainee already has a concrete reference point.

2-4. Scaffolding

Scaffolding means providing support structures that are gradually removed as the trainee develops competence.

MSS scaffolding example (pipeline building): 1. Day 1: Instructor builds a pipeline step-by-step; trainee follows along (maximum scaffolding) 2. Day 2: Instructor provides the pipeline design; trainee builds it independently (reduced scaffolding) 3. Day 3: Trainee receives a data problem; designs and builds the pipeline from scratch (no scaffolding) 4. Practical Exercise: Trainee receives an operational scenario; designs, builds, tests, and governs a complete pipeline (assessment)

The instructor's job is to know when to remove the scaffold. Remove it too early and the trainee fails and disengages. Remove it too late and the trainee never develops independence.

CHAPTER 3 — ARMY INSTRUCTIONAL METHODOLOGY

3-1. Regulatory Framework

MSS instruction operates under: - **AR 350-1** (Army Training and Leader Development): master regulation for all Army training - **TR 350-70** (Army Learning Policy and Systems): TRADOC master regulation for institutional training - **TP 350-70-3** (Faculty and Staff Development): governs instructor certification and development - **TP 350-70-7** (Army Educational Processes): governs assessment and evaluation design

T3-I does not require memorization of these publications. It requires understanding the principles they establish and how those principles apply to MSS-specific instruction.

3-2. Task-Condition-Standard (TCS)

Every learning objective in the MSS curriculum is written in TCS format:

Element	Definition	Example (SL 2, Pipeline Building)
Task	What the trainee will do (action verb)	Build a Pipeline Builder pipeline
Condition	The circumstances under which the task is performed	Given a MSS training environment with Editor access, a source dataset, and the SL 2 task reference
Standard	The measurable performance criteria	Pipeline ingests source data, applies at least 2 transforms, outputs to a dataset; pipeline builds successfully on first execution; pipeline is governed with description and tags per C2DAO naming standards

Instructors must understand TCS because: - Every T&EO is built from TCS objectives — the Go/No-Go criteria are the standards - When a trainee asks "what do I need to do to pass?" the answer is the standard - When an evaluator is uncertain whether to give Go or No-Go, the standard is the arbiter — not the evaluator's personal judgment

3-3. Terminal and Enabling Learning Objectives

Type	Definition	Example
Terminal Learning Objective (TLO)	The overall skill the trainee will demonstrate at the end of a lesson or course	Build and govern a multi-source pipeline on MSS

Type	Definition	Example
Enabling Learning Objective (ELO)	A sub-skill that must be mastered to achieve the TLO	Configure a file ingestion source; apply a join transform; apply a group-by aggregation; add governance metadata

The instructor's role: Teach ELOs in sequence, building toward the TLO. Do not skip ELOs — even if some trainees already know them. Check on learning at each ELO before moving to the next.

3-4. Methods of Instruction

Method	Code	When to Use	MSS Application
Lecture	LEC	Concepts that cannot be demonstrated; regulatory context	Chapter introductions, governance procedures
Discussion	DIS	Building on trainee experience; exploring edge cases	After-action reviews, error analysis, design critiques
Seminar	SEM	Small-group exploration of complex topics	Training philosophy, assessment design
Lab	LAB	Hands-on practice of a specific skill	All platform skills (pipeline building, Workshop, Ontology)
Workshop	WKS	Trainee-led design or problem-solving with instructor facilitation	Ontology design exercise, project planning
Brief	BRF	Orientation, administrative information, evaluations	Course overview, evaluation procedures
Evaluation	EVAL	Summative assessment of trainee performance	Practical exercises, microteaching, Go/No-Go evaluations

For MSS courses: LAB dominates. The typical MSS course is 60-70% lab time. Lectures should be short (15-20 minutes maximum) and immediately followed by a lab exercise that applies the concept.

CHAPTER 4 — PLATFORM DEEP-DIVE FOR INSTRUCTION

4-1. The Instructor Seat

Teaching on MSS is different from building on MSS. The instructor must: - Know every lab step and its expected outcome before the trainee encounters it - Know every common failure mode for each lab step (wrong click, stale data, access denied, type mismatch) - Be able to diagnose and resolve failures in real

time without disrupting the class - Maintain a second environment (instructor account) to demonstrate while trainees work in their own accounts

4-2. SL 1 Through SL 3 Exercise Walkthroughs

T3-I Day 2 covers a full walkthrough of every lab exercise in SL 1, SL 2, and SL 3 from the instructor perspective. The walkthrough covers:

Course	Key Failure Points	Instructor Action
SL 1	CAC authentication failure; Viewer vs. Builder confusion; export/classification marking errors	Pre-verify all student accounts before Day 1; demo the correct classification marking before students attempt it
SL 2	Pipeline build failures (source schema change, type mismatch); Workshop layout issues; governance metadata omission	Keep a pre-built reference pipeline for comparison; teach "check the build log first" as the universal troubleshooting step
SL 3	Ontology design errors (circular links, missing PKs, wrong cardinality); AIP Logic config errors; Quiver linked view failures	Use the design critique rubric to catch errors early; pre-stage a known-bad Ontology for the critique exercise

4-3. Environment Troubleshooting

Instructors must be able to resolve the following without escalation:

Issue	Root Cause	Resolution
CAC auth failure	Expired certificate, wrong CAC in reader, browser cache	Clear browser cache; re-insert CAC; verify certificate expiry
Account expired	Account not refreshed within MSS renewal window	Contact MSS Admin for reactivation; use backup student account in the interim
Wrong environment	Student navigated to production instead of training	Redirect to training environment URL; verify bookmarks
Missing project access	Student account not provisioned to the training project	Instructor grants temporary access (if authorized) or contacts MSS Admin
Stale training data	Synthetic data not refreshed since last course iteration	Re-run synthetic data loader script; notify C2DAO if script fails
Pipeline build error	Schema change in source dataset since last iteration	Identify changed columns; update pipeline transform; document for lesson improvement

CHAPTER 5 — LAB FACILITATION

5-1. Circulation

During lab exercises, the instructor circulates continuously. The circulation pattern: 1. Walk the entire room once to identify students who are stuck (body language: leaning back, not typing, staring at an error message) 2. Assist the most stuck student first — a student stuck for 5 minutes is likely to disengage for the rest of the block 3. After assisting, do not linger — move on. The goal is to unblock, not to co-pilot 4. On the second pass, check students who appeared to be working — verify they are on the right step, not 3 steps behind and building something wrong

5-2. The Help Gradient

Student Signal	Instructor Response
"I got an error"	"Read me the error message." Guide them to interpret it. Do not take the keyboard.
"I don't know what to do next"	"What step are you on? What does the task reference say to do next?" Redirect to the materials.
"Can you just show me?" (during lab)	"Let me walk you through the thinking. What are you trying to accomplish?" Teach the reasoning, not the clicks.
"Can you just show me?" (during evaluation)	"I can't assist during the evaluation. Take a moment, re-read the task, and try your best approach."
Student is ahead of pace	Assign a stretch task or ask them to help a neighbor (peer instruction reinforces learning for both).

5-3. Time Management

- Announce time checks: "You should be on Step 4 by now. If you're not, raise your hand."
- Keep a clock visible. Students lose time sense during labs.
- If 50%+ of the class is behind, stop individual assistance and do a group catch-up (demo the step everyone is stuck on)
- If 1-2 students are significantly behind and the rest are ready to move on, pair them with an ahead-of-pace student and continue

5-4. Dead Time Elimination

Dead time is when students are waiting and not working. Common causes: - Instructor is helping one student for too long (cap individual assistance at 3 minutes; if unresolved, park the issue and return) - Lab environment is loading or building (have a discussion question ready: "While your pipeline builds, let's talk about what would happen if the source schema changed") - Students finished early (have stretch tasks pre-planned for every lab block)

CHAPTER 6 — ASSESSMENT AND EVALUATION

6-1. T&EO Structure

Every MSS course evaluation is governed by a Training and Evaluation Outline (T&EO). T&EOs contain:

Component	Description
Task Number	Unique identifier (e.g., TM10-01, TM20-03)
Task Title	What the trainee must do
Condition	Circumstances (environment, tools, references available)
Standard	Measurable performance criteria — the Go line
Performance Measures	Specific observable actions the evaluator checks
Critical Items	Performance measures marked as critical — failure on any critical item is automatic No-Go regardless of other performance

6-2. Go/No-Go Standardization

The most important skill an evaluator develops is consistency. Two evaluators watching the same performance must reach the same Go/No-Go decision.

Calibration process (taught in T3-I Day 2): 1. All evaluators review the same T&EO 2. All evaluators watch the same recorded performance (or observe the same live performance) 3. Each evaluator scores independently 4. Evaluators compare scores and discuss discrepancies 5. The group establishes a common standard

Common calibration failures: - Evaluator gives Go because the trainee "tried hard" — effort is not a performance measure - Evaluator gives No-Go because the trainee used an unexpected method — if the result meets the standard, the method is acceptable unless the T&EO specifies a required method -

Evaluator assists during evaluation and then gives Go — any evaluator assistance during an evaluation period invalidates the Go

6-3. No-Go Counseling

Delivering a No-Go result is an instructor responsibility. The counseling must be: - **Immediate:** Within the same day as the evaluation - **Specific:** Identify exactly which performance measures were not met and why - **Documented:** Record the No-Go result, the specific deficiencies, and the remediation plan - **Constructive:** The goal is remediation, not punishment. Tell the trainee what they need to do differently, not what they did wrong

6-4. Pre-Test and Post-Test Administration

Parameter	Standard
Pre-test timing	Day 1, first 20 minutes after course overview
Pre-test purpose	Diagnostic only — does not count toward Go/No-Go; identifies trainee baseline
Post-test timing	Final day, after all instruction blocks; before practical exercise
Post-test passing score	Varies by course (see POI); typically 70-80%
Answer key handling	Answer keys are instructor-only documents. Do not distribute the full exam file to students. Print student versions without answer keys.

CHAPTER 7 — PHASE 2: SUPERVISED PRACTICUM

7-1. Purpose

Phase 2 replaces the previous unstructured apprenticeship. It provides a documented, evaluated progression from classroom learning to independent course delivery.

7-2. Practicum Steps

Step	Activity	Duration	Evaluator	Deliverable
P2-1	**Co-teach:** Deliver 40%+ of blocks for one full course iteration under supervision	1 course iteration (1-5 days)	Senior or Master Instructor	Co-teach observation notes from supervising instructor

Step	Activity	Duration	Evaluator	Deliverable
P2-2	**Lead observed:** Deliver the full course independently with observer present for at least 2 blocks per day	1 course iteration	Training OIC or designated Senior Instructor	Formal Instructor Observation Report (FDP Appendix B)
P2-3	**Evaluator observation** (if seeking evaluator certification): Conduct at least 1 complete Go/No-Go evaluation under observation	During P2-2	Training OIC	Evaluator observation notes
P2-4	**Certification:** Training OIC reviews all Phase 2 documentation and issues certification	Upon satisfactory P2-2	Training OIC	Certification memorandum; entry in Instructor Roster

7-3. Phase 2 Scheduling

Phase 2 is not contiguous with Phase 1. It is scheduled around actual course iterations: - The T3-I graduate coordinates with the C2DAO Training OIC to identify upcoming course iterations - P2-1 (co-teach) should occur within 90 days of Phase 1 completion to maintain momentum - P2-2 (lead observed) should occur within 60 days of P2-1 completion - If scheduling delays exceed these timelines, the candidate completes a re-familiarization lab before proceeding

7-4. Phase 2 Failure and Remediation

Outcome	Action
P2-1 unsatisfactory (supervising instructor notes significant deficiencies)	Candidate repeats P2-1 with the same or different supervising instructor
P2-2 unsatisfactory on 1 criterion	Candidate receives written improvement plan; repeats P2-2 for the deficient area
P2-2 unsatisfactory on 2+ criteria	Candidate returns to Phase 1 (attends next T3-I iteration) before re-attempting Phase 2

CHAPTER 8 — INSTRUCTOR PERFORMANCE STANDARDS

8-1. The Seven Observation Criteria

All instructors are evaluated on these criteria during Phase 2 observations and annual sustainment observations (per FDP §6-1):

#	Criterion	Satisfactory Standard
1	**Technical Accuracy**	Instruction is technically correct. Errors are corrected immediately upon identification. No uncorrected errors in the observation period.
2	**Instructional Clarity**	Explanations are clear, appropriately paced, and reinforced with operationally relevant examples.
3	**Student Engagement**	Students are actively engaged during labs. Instructor identifies and assists students who are stuck. Dead time is minimized.
4	**Check on Learning**	Instructor uses effective check-on-learning questions throughout each block. Questions require more than yes/no answers.
5	**Lab Management**	Labs proceed on schedule. Instructor manages common errors efficiently without solving every student's problem for them.
6	**Evaluation Fidelity**	Evaluations follow T&EO procedures exactly. Evaluator does not assist during evaluation periods. Go/No-Go decisions are documented.
7	**Course Materials Currency**	Lesson plan is current. Slides reference the correct platform version. Materials have been reviewed before delivery.

8-2. Hard No-Go Criteria for Instructor Evaluation

During T3-I Phase 1 microteaching and Phase 2 observations, the following are automatic No-Go: - Unsatisfactory on **Technical Accuracy** — an instructor who teaches incorrect information causes operational harm - Unsatisfactory on **Evaluation Fidelity** — an instructor who evaluates incorrectly certifies unqualified personnel

CHAPTER 9 — LESSON IMPROVEMENT AND CURRICULUM MAINTENANCE

9-1. Lesson Improvement Log

Instructors are responsible for continuously improving course content. The process: 1. **During delivery:** Note any lesson weakness in the Lesson Improvement Log (FDP Appendix D) 2. **After each course iteration:** Review notes and draft revisions 3. **Submit:** Proposed revisions to Senior Instructor or Training OIC 4. **Approved revisions:** Incorporated into lesson plans; version history updated

9-2. Curriculum Maintenance SOP

The Curriculum Maintenance SOP governs the review cadence, approval authority, and version control for all MSS course materials. Instructors should be familiar with: - Quarterly review cadence (Platform Monitor role) - Change request process - Version numbering conventions - Review authority by change scope (minor wording → Instructor; structural → Senior Instructor; new content → Master Instructor or Training OIC)

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