Executive Summary

The Department of the Navy (DON) Test and Evaluation (T&E) Total Training Catalog is meant to be a living document and quick reference guide for development and training of the DON T&E workforce. This training catalog serves as a compendium of available T&E-related training in DOD (e.g., Defense Acquisition University, Agencies), DON (e.g., System Commands, Operational Test Activities), Industry (e.g., professional associations) and Academia (e.g. universities). The DON T&E workforce should use this document as a ready resource to find required and elective training, development courses, and to enhance overall T&E knowledge, skills and abilities. This document provides information for those seeking Defense Acquisition Workforce Improvement Act (DAWIA) T&E Career Field Certification, those seeking enhanced knowledge and leadership training for T&E Key Leadership Position and Subject Matter Expertise areas, and those seeking Continuous Learning training credits. We hope that the Total Training Catalog serves as an essential tool and useful reference in your career growth.

Point of Contact

DON T&E Office
DASN (RDT&E)
571-256-7889

DAU Acquisition Community Connection for Naval T&E at:
DON T&E Total Training Catalog

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   - ACQ 101 Fundamentals of Systems Acquisition Management
   - CLE 023 Modeling and Simulation for Test and Evaluation
   - CLE 074 Cybersecurity Throughout DoD Acquisition
   - ENG 101 Fundamentals of Systems Engineering
   - TST 102 Fundamentals of Test and Evaluation

   **Core Plus Development Guide Level I**

   - CLE 004 Introduction to Lean Enterprise Concepts
   - ISA 101 Basic Information Systems Acquisition

   **Test & Evaluation Core Certification Standards Level II**

   - ACQ 202 Intermediate Systems Acquisition, Part A
   - ACQ 203 Intermediate Systems Acquisition, Part B
   - CLE 003 Technical Reviews
   - CLE 029 Testing In a Joint Environment
   - CLE 030 Integrated Testing
   - CLE 035 Introduction to Probability and Statistics
   - CLE 301 Reliability and Maintainability
   - CLM 013 Work-Breakdown Structure
   - CLM 016 Cost Estimating
   - CLR 101 Introduction to the Joint Capabilities Integration & Development System
   - SYS 202 Intermediate Systems Planning, Research, Development, and Engineering, Part I
   - TST 204 Intermediate Test and Evaluation

   **Core Plus Development Guide Level II**

   - CLB 007 Cost Analysis
   - CLE 015 Continuous Process Improvement Familiarization
   - CLE 017 Technical Planning
   - CLE 021 Technology Readiness Assessments
   - CLE 037 Telemetry
   - CLE 038 Time Space-Position Information
LE 039 Environmental Issues in Testing and Evaluation
CLE 060 Practical Software and Systems Measurement
CLM 013 Work-Breakdown Structure
CLM 016 Cost Estimating
CLM 017 Risk Management
CLM 035 Environmental Safety and Occupational Health—Lesson from PMT 352A
CLV 016 Introduction to Earned Value Management
ISA 201 Intermediate Information Systems Acquisition
LOG 101 Acquisition Logistics Fundamentals
LOG 103 Reliability, Availability, and Maintainability (RAM)
PQM 101 Production, Quality, and Manufacturing Fundamentals
SPS 106 Database Maintenance

Test & Evaluation Core Certification Standards Level III

CLB 008 Program Execution
CLB 009 Planning, Programming, Budgeting, and Execution and Budget Exhibits
CLL 015 Product Support Business Case Analysis (BCA)
CLM 014 IPT Management and Leadership
CLM 031 Improved Statement of Work
CLV 016 Introduction to Earned Value Management
TST 303 Advanced Test and Evaluation

Core Plus Development Guide Level III

CLC 011 Contracting for the Rest of Us
CLE 009 ESOH in Systems Engineering
CLE 066 Systems Engineering for Systems of Systems
CLL 012 Supportability Analysis
CLM 032 Evolutionary Acquisition
CLR 151 Analysis of Alternatives
CLR 250 Capabilities-Based Assessment
ENG 202 Applied Systems Engineering in Defense Acquisition, Part II
PMT 251 Program Management Tools Course, Part I
PMT 257 Program Management Tools Course, Part II

DAU Mission Assistance Workshops

WSM 002 Risk Management Workshop
WSM 005 Integrated Baseline Review Workshop
WSM 011 Acquisition Program Transition Workshop
WSM 012 Service Acquisition Workshop (SAW)
WSE 015 JCTD Execution (How to Run A JCTD
WSE 016 JCTD Transition Management Workshop

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Scientist to Sea Program
Introduction to Electro-Optic & Infrared Sensors (EO/IR)
Introduction to Systems Engineering
Radar Signal Processing
Applied Design of Experiments for Test & Evaluation
Applied Systems Engineering
Design of Experiments (DOE) Overview for Supervisors
Agile Scrum Team Training
Agile Leadership Workshop
Agile Scrum Boot Camp
SysML Training
Shipboard Fiber Optics
Engineering Systems for Navy Interoperability
TTWCS Operator and Maintainer Course (For Design Engineers)
Combat Systems Overview
Technical Writing

Naval Air Systems Command (NAVAIR)

School of Developmental T&E

CTE-AVM-101 AC-Coupling, Gains, And Offsets
CTE-AVM-102 Acceleration And Vibration
CTE-AVM-103 Acquiring Selected 1553 Data Within A Chapter 4 Stream
CTE-AVM-104 Advanced Range Telemetry (ARTM)
CTE-AVM-105 Airborne Separation Video System (ASVS)
CTE-AVM-106 Angular Acceleration And Velocity, And RPM
CTE-AVM-107 Binary Bit Representation
CTE-AVM-108 Calibrations And Curve Fitting Of Point Pairs
CTE-AVM-109 Calibration And Verification Of Strain Gage Installations
CTE-AVM-110 Conditioning Of Audio And CVSD Encoding
CTE-AVM-113 Discrete Parameter Measurements
CTE-AVM-114 Flow Measurement
CTE-AVM-115 Force, Stress, And Strain
CTE-AVM-116 Frequency Measurement Signal Conditioning
CTE-AVM-117 GPS And Its Application To Time Synchronization
CTE-AVM-118 Grounding And Shielding Practices For Instrumentation Systems
CTE-AVM-119 Grounding And Shielding For TTC Equipment
CTE-AVM-120 High Speed Imaging
CTE-AVM-121 Imaging Basics I
CTE-AVM-122 Imaging Basics II
CTE-AVM-123 Imaging Basics III
CTE-AVM-124 Instrumentation System Overview
CTE-AVM-125 Instrumentation Power System Design
CTE-AVM-126 IRIG-106 Chapter 4 - PCM Map And Structures
CTE-AVM-127 IRIG-106 Chapter 8 - Digital Data Bus Acquisition Formatting Standard
CTE-AVM-128 Measuring Electrical Signal Characteristics
CTE-AVM-129 MIL-STD-1553 Bus Theory And Practical Applications
CTE-AVM-130 Numbering Systems And Representations
CTE-AVM-131 Oscilloscope Basics
CTE-AVM-132 Position Measurements
CTE-AVM-133 Pre-Modulation Filtering For PCM/FM Systems
CTE-AVM-134 Pre Sample Filtering
CTE-AVM-135 Pressure Sensing
CTE-AVM-136 Proper Isolation Of Aircraft Signals
CTE-AVM-137 Sampling Theory
CTE-AVM-138 Significant Digits And Scientific Notation
CTE-AVM-139 Spectrum Analyzer Basics
CTE-AVM-140 Strain Gage Theory
CTE-AVM-141 Telemetry System Design, Setup And Optimization
CTE-AVM-142 Temperature Measurements I
CTE-AVM-143 Temperature Measurements II
CTE-AVM-145 Uncertainty Analysis Using ISG’s Uncertainty Analyzer 3.0
CTE-AVM-146 Understanding And Using A Time Domain Reflectometer (TDR)
CTE-LTI-210 A Comprehensive Introduction To Networking
CTE-ALB-200 Air Launched Ballistics Overview
CTE-FLU-200 Introduction To Flutter
CTE-GIT-223 Advanced Concepts In Autonomous Unmanned Systems
CTE-KUA-210 Aircraft Structural Loads
CTE-KUA-211 Principles Of Aeroelasticity
CTE-KUA-212 Helicopter Performance, Stability And Control
CTE-KUA-213 Airplane Subsonic Wind Tunnel Testing And Aerodynamic Design
CTE-KUA-214 Digital Flight Control Systems: Analysis And Design
CTE-PSE-200 Piloted Simulated Evaluations
CTE-PRF-200 Introduction To Level Flight Performance Testing
CTE-SPE-210 Mass Properties Space Electronics
CTE-TP-100 Test Basics
CTE-TP-200 Test Planning For Test And Evaluation (T&E) Managers
CTE-TP-300 Test Planning For Integrated Test Teams (ITTs)
CTE-TR-100 Test Planning
CTE-TR-200 Test Planning For T&E Managers
CTE-TR-100 Test Reporting Workshop
CTE-XEA-100 Introduction To Flight Test For Enlisted Aircrew
CTE-TP-300 Test Planning For Integrated Test Teams (ITTs)
CTE-TP-200 Test Planning For Test And Evaluation (T&E) Managers
CTE-TR-100 Test Reporting
CTE-TR-200 Test Reporting For T&E Managers
CTE-TR-100 Test Report Writing Workshop
CTE-TP-300 Test Planning For Integrated Test Teams (ITTs)
CTE-TP-200 Test Planning For Test And Evaluation (T&E) Managers
CTE-TR-100 Test Reporting
CTE-TR-200 Test Reporting For T&E Managers
CTE-TR-100 Test Report Writing Workshop
CTE-XEA-100 Introduction To Flight Test For Enlisted Aircrew
CTE-TP-300 Test Planning For Integrated Test Teams (ITTs)
CTE-AIA-210 Radar
CTE-ASW-200 Introduction To Air Anti-Submarine Warfare
CTE-ATI-210 Fundamentals Of Link 16 /Joint Tactical Information Distribution System (JTIDS) /Midshipmen Information System (MIDS)
CTE-ATI-211 Link 16 Advanced Applied Technology
CTE-CNS-101 Communication Navigation Surveillance/Air Traffic Management (CNS/ATM)
CTE-CNS-201 Communication Navigation Surveillance (CNS)/Air Traffic Management (ATM)
CTE-EDA-211 PADS Layout Training EDA Direct
CTE-EDS-200 Fundamentals Of Electronic Defense Systems
CTE-EOS-200 Introduction To Electro-Optic Systems
CTE-EWB-200 Electronic Warfare Basics
CTE-EWT-200 Electronic Warfare Test Techniques
CTE-GIT-211 Multi-Sensor Data Fusion
CTE-GIT-212 Principles Of Modern Radar
CTE-GIT-213 Phased Array Radar Systems
CTE-GIT-214 Fundamentals Of Radar Signal Processing
CTE-GIT-215 Fundamentals Of Cyber T&E
CTE-GIT-216 Radar Systems Software Engineering
CTE-GIT-217 Test And Evaluation Of Defense RF Electronic Systems
CTE-GIT-218 Principles Of Pulse Doppler Radar
CTE-GTI-222 Airborne AESA Radar
CTE-LTI-210 A Comprehensive Introduction To Networking
CTE-LTI-211 Network Configuration And Troubleshooting
CTE-MSF-100 Mission Systems Fundamentals
CTE-MTG-210 Automatic Identification System (AIS)
CTE-NAV-200 Introduction To Navigation Systems Test And Evaluation
CTE-NTG-210 Radio Frequency Interference (RFI) And Jamming Issues For NAVAIR
CTE-NTG-211 GPS High Precision Kinematic Carrier Phase Techniques With LAAS
CTE-NTG-212 GPS Operation For Engineers And Technical Professionals
CTE-TPS-SYS Introduction To Aircraft And Systems Test & Evaluation
CTE-TPS-UAS Introduction To Unmanned Aerial Systems (UAS)
CTE-TSI-210 MIL-STD-1553
CTE-TSI-212 MIL-STD-1760
CTE-WLE-210 COMPTIA SEC+ 301
CTE-WLE-211 Windows 7 Configuring
CTE-WTG-210 Radio Frequency And Microwave Power Measurements
CTE-CLR-200 China Lake Ranges 101
CTE-CSM-216 Intro To SQL/MYSQL
CTE-CSM-217 C++ Programming For C
CTE-CSM-218 MYSQL For Database Administrators
CTE-GBK-210 Troubleshooting TCP/IP Networks With Wireshark
CTE-GIT-219 Precision Stabilized Pointing And Tracking Systems
CTE-GIT-220 Basic RF Electronic Warfare Concepts
CTE-IGX-210 IGRAFX Process For Six Sigma
CTE-ISC-210 Certified Secure Software Lifecycle Professional (CSSLP)
CTE-LTI-215 Software Testing And Quality Assurance
CTE-CMT-100 Change Management For T&E
CTE-DOT-200 The DT/OT Transition Report
CTE-HWI-210 Effective Writing For Engineers
CTE-LTI-216 System And Network Security Introduction
CTE-LTI-217 Windows Server 2008 Administration
CTE-LTI-218 Windows Powershell: Automating Administrative Tasks
CTE-LTI-219 Switches And Routers: A Comprehensive Hands-On Introduction
CTE-MTL-210 MATLAB Basics I
CTE-MTL-216 MATLAB Basics II
CTE-MTL-211 Advanced MATLAB
CTE-MTL-212 Image Processing
CTE-MTL-213 Signal Processing - Electronic Warfare
CTE-MTL-214 Signal Processing MATLAB
CTE-MTL-215 Simulink-Aero/Controls
CTE-MTL-217 MATLAB Fundamentals
CTE-MTL-218 Signal Processing With Simulink
CTE-MTL-219 MATLAB And Simulink For Control Design Acceleration
CTE-WLE-212 ODE 102 OMEGA Data Environment
CTE-NAI-210 LABVIEW Core 1
CTE-ANM-210 VFX Fundamentals Animation Mentor
CTE-BLF-210 Electro Static Discharge (ESD) Prevention
CTE-EDA-210 Dxdesigner Pads Flow
CTE-EDS-200 Introduction To Electro-Optic Systems
CTE-EMA-200 ORCAD PCB Editor EMA Design Automation
CTE-EWP-200 Electronic Warfare Compatibility - Test Evaluation (T&E) Principles
CTE-TGS-210 Tactical Combat Casualty Care
CTE-TOM-200 Introduction To Tomahawk Cruise Missile Test And Evaluation (T&E)
School of Operational T&E

CTE-COM-211 Mission Based T&E
CTE-IEF-200 Integrated Evaluation Framework
CTE-OTD-200 Operational Test Director

School of T&E Management

CTE-APM-100 STEM Bootcamp
CTE-IEF-200 Integrated Evaluation Framework
CTE-NST-200 N84 Strategies For T&E
CTE-NTS-210 Safety Seminar On TWA800
CTE-OTF-200 Operational Testing Fundamentals Overview
CTE-OTR-200 Certification Of Readiness For Operational Test
CTE-SLS-201 Writing Testable Requirements For Successful Programs
CTE-TEM-210 ABCs Of Effective Feedback
CTE-WBB-210 How Washington Works
CTE-DAU-211 Logistics T&E
CTE-DAU-210 T&E Across The Acquisition Lifecycle
CTE-NPS-211 Advanced T&E Planning And Experimental Design
CTE-SLS-202 Developing Rainbow Charts

School of Modeling and Simulation for T&E

CTE-GBK-212 Certified Ethical Hacker
CTE-GIT-221 Airborne EW System Integration
CTE-GIT-227 Cyber / Electronic Warfare Convergence
CTE-MSC-200 Contracting For Modeling And Simulation
CTE-MSE-200 Senior Leadership Modeling And Simulation Session
CTE-MSP-200 Modeling And Simulation Best Practices
CTE-MSR-100 Modeling And Simulation Capabilities And Resources
CTE-MSS-200 Modeling And Simulation Support Plan (MSSP)
CTE-ODU-210 Introduction To Modeling And Simulation
CTE-ODU-211 Simulation Fundamentals
CTE-ODU-212 Simulation Design
CTE-ODU-213 System Architecture And Modeling
CTE-RHT-210 Red Hat System Administration I
CTE-RHT-211 Red Hat System Administration II
CTE-SEI-210 Secure Coding in C and C ++
CTE-SEI-211 Applied Cybersecurity, Incident Response And Forensics
CTE-VVA-200 Introduction To Verification, Validation, And Accreditation (VV&A)
CTE-WSD-200 Operational Warfighting Scenario Development For Test And Evaluation/Net-Centric Evaluation Capability Module

Space and Naval Warfare Systems Command (SPAWAR)
Design of Experiments (DOE)
Reliability Growth

**Marine Corps System Command (MCSC)**

Integrated Test Course

**Commander Operational Test and Evaluation Force (COMOPTEVFOR)**

OTD Course
Integrated Evaluation Framework (IEF) Course
Test Planning Course
Post-Test Iterative Process Course
Survey Course

**Marine Corps Operational Test and Evaluation Activity (MCOTEA)**

MCOTEA 101

**Army Test and Evaluation Command (ATEC)**

Test and Evaluation Basic Course (TEBC)

**Defense Information Systems Agency (DISA)**

Basic Information Technology T&E Methodologies Course

**Department of Navy Test & Evaluation (DON T&E) Office**

T&E Working Integrated Product Team (WIPT) Tutorial
DON T&E Global Course, “Strategies for Effective and Efficient T&E”
DON T&E KLP Qualification Board Training Presentation

F. **Academia, Professional Association & Industry T&E Course Descriptions**

**Georgia Institute of Technology**

- DEF 2504P Introduction to Intelligence, Surveillance, Reconnaissance (ISR) Concepts, Systems, and Test Evaluation
- DEF 2703P Directed Infrared Countermeasures: Technology, Modeling, and Testing
- DEF 3535P Airborne EW System Integration
- DEF 4527P Human Systems Integration Test and Evaluation Methods
- DEF 4603P Fundamentals of Cyber Systems Test and Evaluation
- DEF 5001P Test and Evaluation of RF Defense Electronic Systems
- DEF 5003P Design of Experiments (DOE) I: Introduction to DOE
- DEF 5004P Electronic Combat Flight Testing From a Systems Engineering Perspective
- DEF 5006P Scientific Principles of Test and Evaluation
- DEF 5007P Design of Experiments (DOE) II: Applied DOE for Test and Evaluation
- DEF 5008P Fundamentals of Flight Test and Evaluation
DEF 4604P Cyber Vulnerabilities and Embedded Systems
DEF 4654P Development of Secure Embedded Systems
Digital Forensics Techniques for Weapons Systems
DEF 2508P Introduction to Network-Centric Warfare Technologies
DEF 4606P Introduction to Penetration Testing
DEF 4601P Introduction to Malware Analysis
DEF 4607P Risk Management Framework for DoD

International Test and Evaluation Association (ITEA)

Android Forensics and Security Testing
Cybersecurity and Information Assurance
Fundamentals of T&E Processes
Scientific Test and Analysis Techniques (STAT), a.k.a. Operational DOE
What T&E’rs Need to Know about Program Management and Systems Engineering and Why

Air Force Institute of Technology (AFIT)

STAT 583 Introduction to Probability and Statistics
OPER 679 Empirical Modeling
OPER 688 Operational Experimentation
LOGM 634 Reliability, Maintainability And Supportability
OPER 791 Capstone Research Project For Operational Sciences
OPER 689 Advanced Statistical Methods For Test
SOT 210 Introduction to Experimental Design and Analysis
SOT 310 Experimental Design and Analysis I
SOT 410 Experimental Design and Analysis II
WKS 410 Reliability and Reliability Growth
WKS 411 Reliability and Reliability Growth Fundamentals

Defense Systems Information Analysis Center (DSIAC)

Threat Weapons and Effects

SANS Technology Institute

Information Security

SEC301 Intro to Information Security
SEC401 Security Essentials Bootcamp Style
SEC501 Advanced Security Essentials Enterprise Defender

Penetration Testing

SEC504: Hacker Tools, Techniques, Exploits and Incident Handling
SEC542: Web App Penetration Testing and Ethical Hacking
SEC560: Network Penetration Testing and Ethical Hacking
SEC561: Immersive Hands-On Hacking Techniques
SEC562: CyberCity Hands-on Kinetic Cyber Range Exercise
SEC573: Python for Penetration Testers
SEC575: Mobile Device Security and Ethical Hacking
SEC617: Wireless Ethical Hacking, Penetration Testing, and Defenses
SEC642: Advanced Web App Penetration Testing and Ethical Hacking
SEC660: Advanced Penetration Testing, Exploit Writing, and Ethical Hacking
SEC760: Advanced Exploit Development for Penetration Testers

Cyber Defense

SEC502 Perimeter Protection In-Depth
SEC503 Intrusion Detection In-Depth
SEC505 Securing Windows with PowerShell and the Critical Security Controls
SEC506 Securing Linux/Unix
SEC440 Critical Security Controls: Planning, Implementing and Auditing
SEC464 Cyber Security Training for IT Administrators
SEC480 Top 4 Mitigation Strategies: Implementing & Auditing
SEC511 Continuous Monitoring and Security Operations
SEC550 Active Defense, Offensive Countermeasures and Cyber Deception
SEC566 Implementing and Auditing the Critical Security Controls - In-Depth
MGT414 SANS Training Program for CISSP Certification

**SURVICE Engineering Group**

Building More Survivable Defense Systems: A Short Course in Live Fire Test and Evaluation (LFT&E) and More Effective Weapons

G. **Leadership Development Course Descriptions** .......................................................................................... 146

**Defense Acquisition University** ................................................................................................................. 146

ACQ 404 Systems Acquisition Management Course
ACQ 405 Executive Refresher Course
ACQ 450 Leading in the Acquisition Environment
ACQ 451 Integrated Acquisition for Decision Makers
PMT 400 Program Manager’s Skill Course
PMT 401 Program Manager’s Course
PMT 402 Executive Program Manager’s Course

**Harvard Business School (HBS)**

HBS 409 Decision Making
HBS 427 Meeting Management
HBS 441 Team Management
HBS 301 Managing Difficult Conversations
HBS 302 Negotiating for Results
HBS 303 Leading Team with Emotional Intelligence
HBS 304 Managing Difficult Conversations High Bandwidth
HBS 305 Negotiating for Results High Bandwidth
HBS 306 Leading Teams with Emotional Intelligence High Bandwidth
HBS 309 Coaching For Results
HBS 310 Influencing and Motivating Others
HBS 401 Budgeting
HBS 402 Business Case Development
HBS 403 Business Plan Development
HBS 404 Career Management
HBS 405 Change Management
HBS 406 Coaching
HBS 407 Crisis Management
HBS 408 Customer Focus
HBS 409 Decision Making
HBS 410 Delegating
HBS 411 Developing Employees
HBS 412 Difficult Interactions
HBS 413 Dismissing an Employee
HBS 414 Diversity
HBS 415 Ethics at Work
HBS 416 Feedback Essentials
HBS 417 Finance Essentials
HBS 418 Global Collaborations
HBS 419 Goal Setting
HBS 420 Hiring
HBS 421 Innovation and Creativity
HBS 422 Innovation Implementation
HBS 423 Laying Off Employees
HBS 424 Leading and Motivating
HBS 425 Managing Upward
HBS 426 Marketing Essentials
HBS 427 Meeting Management
HBS 428 Negotiating
HBS 429 New Manager Transitions
HBS 430 Performance Appraisal
HBS 431 Performance Measurement
HBS 432 Persuading Others
HBS 433 Presentation Skills
HBS 434 Process Improvement
HBS 435 Project Management
HBS 436 Retaining Employees
HBS 437 Strategic Thinking
HBS 438 Strategy Execution
HBS 439 Stress Management
HBS 440 Team Leadership
HBS 441 Team Management
HBS 442 Time Management
HBS 443 Virtual Teams
HBS 444 Writing Skills

**Federal Leadership Development Programs**

Department of Defense/Department of the Navy (DOD/Navy) - The Dwight D. Eisenhower School
Department of Defense/Washington Headquarters Services (DOD/WHS) - APEX
Department of Labor (DOL) - Leading EDGE
Department of the Interior/Federal Consulting Group (DOI/FCG) - Savvy Leader Practicum (SLP): A Breakthrough Approach to Increasing Federal Leader Effectiveness
Office of Personnel Management/Federal Executive Institute (OPM/FEI) - Leadership for a Democratic Society

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Office of Personnel Management/Federal Executive Institute (OPM/FEI) - Management Development Centers
Office of Personnel Management/Federal Executive Institute (OPM/FEI) – LEAD Certificate Program
Office of Personnel Management/Federal Executive Institute (OPM/FEI) – SES Briefings for New Executives

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Executive Leadership Development Program
Defense Senior Leadership Development Program
Continuing Education for Senior Leaders

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Navy Senior Leader Seminar
Strategic Communication Workshop

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A. INTRODUCTION

The Department of the Navy (DON) Test and Evaluation (T&E) Total Training Catalog is meant to be a living document and quick reference guide for development and training of the DON T&E workforce. This training catalog serves as a compendium of available T&E-related training in DOD (e.g., Defense Acquisition University, Agencies), DON (e.g., System Commands, Operational Test Activities), Industry (e.g., professional associations or school houses) and Academia (e.g., universities). The DON T&E workforce should use this document as a ready resource to find required and elective training, development courses, and to enhance overall T&E knowledge, skills and abilities. This document provides information for those seeking Defense Acquisition Workforce Improvement Act (DAWIA) T&E Career Field Certification, leadership training, and those seeking improvement of capabilities in subject matter expertise areas for Continuous Learning training needs. The overall purpose of this training catalog is summarized below.

Purpose of the DON T&E Total Training Catalog

- Enhance DON T&E Workforce with high quality, integrated training.
- Leverage most effective T&E workforce training approaches across the DON T&E domain.
- Promote career satisfaction, advancement and retention of T&E workforce.
- Provide workforce development vectors to leadership training.

B. BACKGROUND

The Deputy DON T&E Executive, DASN (RDT&E)/N84C, is the Naval Acquisition Career Field Council (ACC) T&E National Lead and has the task to promote the health of the career field to ensure sustainability in the future. The DON T&E Office also represents Navy and Marine Corps T&E developmental and training interests on the OSD T&E Functional Integrated Process Team (FIPT), which is focused on improving policies and training curriculum for DOD DAWIA T&E coded personnel.

T&E Improvement Process (TEIP)

To improve T&E across the board, the Deputy DON T&E Executive has established the TEIP with four major T&E thrust areas: Workforce, Infrastructure, Policy and Communications. The T&E Workforce Thrust is relevant and aligned with Director Acquisition Career Management (DACM) and DON goals to revitalize and enhance development of the Acquisition Workforce (AWF). As far as DAWIA career field communities go, the T&E AWF is not a large group and is unique in that there are many other career fields (e.g., Program Management, Engineering (ENG), and Information Technology) who execute T&E in support of acquisition programs.

DON T&E Workforce Competency (WC) Integrated Product Team (IPT)

The DON T&E WC IPT was established by the Deputy DON T&E Executive to address critical T&E AWF focus areas for improvement. Four major areas are currently being addressed, which are:

1. Forecasting and Rightsizing.
2. Hiring, Retention and Career Progression.

The DON T&E WC IPT consists of a Chairman from the DON T&E Office, DASN (RDT&E), and T&E representatives from OPNAV N842, the four major Naval Systems Commands (SYSCOMs) (i.e., NAVSEA, NAVAIR, SPAWAR and MCSC) and the two Operational Test Agencies (OTAs) (i.e., COMOPTEVFOR and MCOTE) in the DON organization. The T&E WC IPT provides a quarterly forum and regular communication channel between SYSCOMs, OTAs, OPNAV N842 and DASN (RDT&E) on workforce issues. The DON T&E WC IPT has a strategic plan with goals and objectives that address focus areas in an effort to enhance the effectiveness and efficiency of the Navy and Marine Corps T&E workforce who support acquisition programs. Some of the current DON T&E WC IPT initiatives are noted below:

1. Improved tracking forecasting, rightsizing, hiring, retention, and career progression.
2. Improved workforce development opportunities and training.
4. Provide field activity feedback to DOD T&E Function IPT and DON ACC Council initiatives.
5. Support development of the OSD T&E Key Leadership Position (KLP) Qualification Board (Q-Boards).

T&E DAWIA Certification Standards

The formal educational and experience requirements for the T&E Levels I, II and III career field vary with increasing levels of responsibility and involvement in the acquisition of complex systems. T&E Level III requires a technical or scientific field degree for T&E Leads and T&E Key Leadership Positions on ACAT I and IA programs. This is due to the complexity of acquisition systems and need for rigorous, scientific and statistically based T&E design and execution methodologies.

T&E DAWIA certification standards are as follows:

T&E Level I - Associates degree in any discipline; 1 year of T&E experience.

T&E Level II - Baccalaureate degree or higher (any field of study). A total of 24 semester hours or equivalent in technical or scientific courses such as mathematics (e.g., calculus, probability, statistics), physical sciences (e.g., chemistry, biology, physics), psychology, operations research/systems analysis, engineering, computer science, and information technology; 2 years of T&E experience.

T&E Level III - Baccalaureate or graduate degree in a technical or scientific field such as engineering, physics, chemistry, biology, mathematics, operations research, engineering management, or computer science; 4 years of T&E experience.

DON T&E Training Community

Within the DON T&E WC IPT, a Development and Training goal was to complete a DON T&E Total Training Catalog reflecting T&E training available in DOD, DON and outside sources. See Figure 1 which provides an overview of training resources across the DOD T&E Enterprise that has been available to the DON T&E workforce. The T&E community continues to evolve across the acquisition and non-AWF to grow and meet program needs.
We all have the common goal of ensuring that the systems we develop, deliver and deploy do what they should for our warfighters. It’s an exciting area to work in and our workforce is valued and appreciated for the contributions they provide.

C. CERTIFICATION AND TRAINING ROADMAP

DOD and DON have training and development of its AWF, targeted to deliver a forward thinking AWF that is well-managed, highly trained and qualified to fill Critical and Key Leadership Positions (KLPs). The DOD Acquisition, Technology & Logistics (AT&L) career field “Certification & CorePlus Development Guide” for each DAWIA career field, including T&E, can be found at: http://icatalog.dau.mil/onlinelcatalog/CareerLvl.aspx#

The DON DACM has the following goals for its acquisition workforce: 1) Energize the Workforce, 2) Focused on Professional and Technical Excellence and 3) Reinforce Responsibility and Accountability. The ‘DON Acquisition Workforce FY 16-22 Strategic Plan’ provides the framework for achieving these goals. It touches every member of the workforce throughout all professional career stages to include T&E. The DON DAWIA Operating Guide implements the Navy DAWIA process and can be found at the following web link along with other policy documents and guides: http://www.secnav.navy.mil/rda/workforce/Pages/StrategyPolicy.aspx

The DON DACM has also set the following Fiscal Year 2016 DAWIA Goals to emphasize improving performance toward achieving DAWIA requirements. To increase emphasis on the visibility of Program KLPs, one of which is the Program T&E Lead, also called the Chief Developmental Tester for Major Acquisition Defense Programs (MDAPs). The FY15 DON DACM goals, and in turn the DON T&E AWF goals, as applicable, are as follows:

- **Goal 1 – Certification Levels**: 100% of AWF members are certified to the level required by their position within allowable timeframes.
- **Goal 2 – Continuous Learning**: 100% of AWF members have current Continuous Learning certificates.
- **Goal 3 – Acquisition Corps Membership for CAPs**: 95% of CAPs be filled by Acquisition Corps members at the time of assignment to the CAP.
- **Goal 4 – PMT 401/402 Compliance**: 100% of ACAT I and II PMs and DPMs complete PMT 401 and PMT 402 within six months of their PM/DPM assignment.
- **Goal 5 – Key Leadership Positions**: 100% of individuals assigned to KLPs are fully qualified.
Figure 2 provides an overview of DAWIA T&E Career Field Certification and other T&E training aspects that should be pursued by all DON T&E AWF members. Non-AWF members doing T&E can also take DAWIA Level I courses to enhance their knowledge, abilities and skills.
Figure 3 below provides a notional DON T&E Career Path Developmental Model with a summary of education, certification and technical knowledge requirements.
The KLP Q-Board initiative was established by the Office of the Secretary of Defense for Acquisition, Technology, and Logistics (OSD (AT&L) and supported by the Services to ensure that all KLPs for MDAPs and Major Automated Information Systems (MAIS) (i.e., ACAT I/IA programs) are filled by qualified members of the Armed Forces or full time employees of the DOD. Specifics for the initiative are outlined in the OSD (AT&L) Memo on KLP and Qualification Criteria dated November 8, 2013. The effort is an extension of Better Buying Power to improve the professionalism of the total AWF. The Chief Developmental Tester is a mandatory T&E KLP for ACAT I and IA programs, along with a number of other critical program positions (e.g., Chief Engineer/Lead Systems Engineer, Business Financial Manager). The T&E KLP Q-Boards take place on a yearly basis, typically in December of each year, to qualify a pool of individuals with the skills necessary to fill a KLP position. This catalog serves to outline the necessary training to achieve the required DAWIA Certification, Continuous Learning Points (CLPs) and leadership training needed by T&E KLPs.

The OSD (AT&L) Memo on KLP and Qualification Criteria of November 8, 2013 identified that KLP Q-Board candidates must meet the following requirements and their applications will be reviewed for the same for qualification:

- **Education**: Bachelor’s Degree in scientific or technical field (required); Relevant advanced degree (preferred) and Senior Service School is preferred.
- **Training**: DAWIA T&E Level III certification
- **Experience**: Candidate or incumbent be GS-14/15, 0-5/0-6 or senior; 8 years acquisition experience or equivalent demonstration proficiency; 2 years T&E Level III; Cross functional and broadening assignments/rotations; 2 years as functional mentorship (10 hours/year).
- **Competencies**: Demonstrated superior knowledge in T&E Competencies and in the full acquisition lifecycle supporting T&E, to include: Planning, Preparation, Execution, Analysis, Evaluation and Reporting.
  - **Executive Leadership** – Fundamental, Leading Change, Leading People, Results Driven, Business Acumen, Building Coalitions and Enterprise Wide Perspective.
  - **Program Execution** - Test Readiness, Test Control Management, Data Management, Data Verification and Validation, Determination of Test Adequacy, Validation of Test Results, Evaluation and Conclusions, Participation in Technical Reviews, Key T&E Documentation including the T&E Master Plan (TEMP).
  - **Technical Management** - T&E Planning, Coordination of T&E Activities and Events and Test Infrastructure, T&E Risk Identification and Management, Scientific Test and Analysis Techniques
- **Tenure**: No agreement required for the pool, with 3 year written agreement for a KLP position.
- **Currency**: 80 hours of CLPs every 2 years (with 30 hours relevant to T&E (Core Plus recommended); 10 hours in cross-functional and 10 hours in leadership.

Incumbent T&E KLPs (i.e., Chief Developmental Tester, APM T&E) will not be required to apply to the KLP Q-Boards. However, they are expected to have met the minimum requirements by June 30, 2015.
DAU provides a full range of basic, intermediate, and advanced certification training, assignment-specific training, applied research, and continuous learning opportunities. The university also fosters professional development through mission assistance, rapid-deployment training on emerging acquisition initiatives, online knowledge-sharing tools, and continuous learning modules. All T&E career field personnel need to complete DAU courses in accordance with the level assigned to their position. Figure 4 may be used a guide to identify the DAU core courses needed to complete T&E Levels 1, 2 and 3 career field education needed for certification.

The courses for this section have been grouped together by Core Certification Standards and the Core Plus Development Guide. Core Plus Development and Training courses are to be tailored to your type of working assignment (i.e., Headquarters and Staff, Program Management/Matrix Support or Range/Lab/Field Support Activity).


**Figure 4: T&E Training and Experience Requirements**

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**DON T&E Total Training Catalog Release 1.4**
Test & Evaluation Core Certification Standards Level I

**ACQ 101 Fundamentals of Systems Acquisition Management**

Description: This course provides a broad overview of the DoD systems acquisition process, covering all phases of acquisition. It introduces the Joint Capabilities Integration and Development System; the planning, programming, budgeting, and execution process; DoD 5000-series policy documents; and current issues in systems acquisition management. Designed for individuals who have little or no experience in DoD acquisition management, this course has proven very useful to personnel in headquarters, program management, and functional or support offices.

Who Should Take This Training: This course is designed for military officers, O-1 through O-3, and DoD civilians, GS-5 through GS-9. However, this course is open to all ranks and grades.

Additional Course Information: This course is offered throughout the year as Distance Learning, and the course length is approximately 25 hours. 3 Continuous Education Units, 30 Distance or Continuous Learning Points, and 7 Reservist Retirement Points.

**CLE 023 Modeling and Simulation for Test and Evaluation**

Description: This Modeling and Simulation (M&S) for Test and Evaluation (T&E) module provides key information, from a T&E perspective, about the requirements, benefits, and challenges regarding M&S planning and execution. Effective use of M&S for T&E over the life cycle of a system can substantially reduce program risk and has benefits for Program Managers, Systems Engineers, decision-makers, and system users.

Who Should Take This Training: T&E, SPRDE and PM career fields.

Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 3 hours. 0 Continuous Education Units, 3 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

**CLE 074 Cybersecurity Throughout DoD Acquisition**

Description: This continuous learning module provides foundational understanding of basic principles of cybersecurity and cybersecurity risk management in the defense acquisition field.

Who Should Take This Training: This module is primarily intended for all DoD Acquisition career fields but especially military officers O-3 and above, civilians GS-9 and above, and industry equivalents across the defense acquisition workforce.

Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 5 hours. 0 Continuous Education Units, 5 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

**ENG 101 Fundamentals of Systems Engineering**

Description: This course is a technically rigorous, comprehensive introduction to Systems Engineering and the various Technical Management and Technical Processes involved in its
application. Based around the Systems Engineering processes outlined in the Defense Acquisition Guidebook (DAG), this course provides the essential foundations needed for systems engineers and others to effectively participate in the application and the management of DoD Systems Engineering processes and their related activities.

Who Should Take This Training: Systems Engineer in the acquisition workforce. This course is also suitable for acquisition personnel in technical and program management positions who want to understand more about systems engineering processes.

Additional Course Information: This course is offered throughout the year as Distance Learning, and the course length is approximately 35 hours. 3.5 Continuous Education Units, 35 Distance or Continuous Learning Points, and 9 Reservist Retirement Points.

Prerequisites: ACQ 101, Fundamentals of Systems Acquisition Management.

**TST 102 Fundamentals of Test and Evaluation**

Description: The Fundamentals of Test and Evaluation course emphasizes basic DoD test and evaluation (T&E) principles, policies, processes, and practices. TST 102 covers the integrated T&E processes outlined in the Defense Acquisition Guidebook and provides the essential foundation knowledge needed by T&E professionals and others to more effectively participate in DoD T&E activities.

Who Should Take This Training: This course is part of the Level I certification training requirement for the Test & Evaluation career field. Additionally, as a basic introduction to T&E, it is suitable for personnel in other technical acquisition management and program management positions who want to understand more about T&E and the critical role it plays in system acquisition.

Additional Course Information: This course is offered throughout the year as Distance Learning, and the course length is approximately 18 hours. 1.8 Continuous Education Units, 18 Distance or Continuous Learning Points, and 5 Reservist Retirement Points.


**Core Plus Development Guide Level I**

**CLE 004 Introduction to Lean Enterprise Concepts**

Description: This module focuses on the lean concepts most applicable to manufacturing and the management of industrial facilities. It addresses the five fundamental Lean principles; Lean value streams; Lean metrics; identifying manufacturing and information waste within an enterprise; and techniques for implementing Lean beyond the factory floor to include value stream analysis and mapping.

Who Should Take This Training: All acquisition professionals, but especially those in the PQM career field, as well as members of the defense industry.
ISA 101 Basic Information Systems Acquisition

Description: Within the framework of a program office IPT, this course covers introductory-level concepts in DoD information systems and software acquisition management. Key areas covered include DoD regulatory and technical frameworks, common software risks, software and system architectures, lifecycle reviews and software development and integration processes. Software standards, information assurance, software and system measures, testing, contracting issues, software quality, and the role of process maturity, as well as best practices for the management of software systems are also introduced.

Who Should Take This Training: Acquisition personnel in the Information Technology and Program Management career fields.

Additional Course Information: This course is offered throughout the year as Distance Learning, and the course length is approximately 29 hours. 2.3 Continuous Education Units, 23 Distance or Continuous Learning Points, and 6 Reservist Retirement Points.


Test & Evaluation Core Certification Standards Level II

ACQ 202 Intermediate Systems Acquisition, Part A

Description: Part A of a two-course series designed for mid-level acquisition professionals. It provides a dynamic, real-time learning environment oriented towards developing the requisite skills and knowledge to work in integrated product teams by providing an overview of systems acquisition principles, policies and processes.

Who Should Take This Training: All DoD acquisition professional at level II as well as their industry counterparts.

Additional Course Information: This course is offered throughout the year as Distance Learning, and the course length is approximately 35 hours. 3.5 Continuous Education Units, 35 Distance or Continuous Learning Points, and 9 Reservist Retirement Points.

Prerequisites: ACQ 101, Fundamentals of Systems Acquisition Management.

ACQ 203 Intermediate Systems Acquisition, Part B (R)

Description: Part B of a two-course series designed for mid-level acquisition professionals. It provides a dynamic, real-time learning environment oriented towards developing the requisite skills and knowledge to work in integrated product teams by providing an overview of systems acquisition principles, policies and processes.
Who Should Take This Training: All DoD acquisition professional at level II as well as their industry counterparts.

Additional Course Information: This course is offered throughout the year as Resident Learning, and the course length is approximately 4.5 class days. 3.4 Continuous Education Units, 34 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

Prerequisites: ACQ 202, Intermediate Systems Acquisition, Part A.

CLE 003 Technical Reviews

Description: Technical Reviews form the backbone of a robust Technical Assessment Process and are one of the foundation elements of an effective Systems Engineering Plan. This module provides a systematic process for employing Technical Reviews to assess design maturity, technical risk, development status and programmatic risk for acquisition programs. The module also presents essential, practical guidelines on the effective use of Technical Reviews as part of the DoD acquisition life cycle and also provides access to detailed, tailorable checklists for individual Technical Reviews that can be used to support their conduct. These Technical Review guidelines are based on best engineering practices as well as the Defense Acquisition Guidebook, Chapter 4.

Who Should Take This Training: Members of the acquisition workforce who are interested in understanding how to effectively apply Technical Reviews.

Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 3 hours. 0 Continuous Education Units, 3 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

CLE 029 Testing In a Joint Environment

Description: This module will familiarize DoD Test and Evaluation personnel and other acquisition professionals with the basic principles and practices related to testing in a joint environment.

Who Should Take This Training: Members of the T&E and PM DAWIA career field and any other personnel interested in learning about of Testing in a Joint Environment.

Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 3 hours. 0 Continuous Education Units, 3 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

CLE 030 Integrated Testing

Description: This continuous learning module provides the Test and Evaluation workforce member information and resources on Test & Evaluation (T&E) in the Defense Acquisition Lifecycle and the Integrated Testing concept. Topics include common types of T&E used by most acquisition programs, Test and Evaluation Master Plans, and the goals and benefits of integrated testing.

Who Should Take This Training: Primarily intended for Level II T&E Workforce members.
Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 2.5 hours. 0 Continuous Education Units, 3 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

**CLE 035 Introduction to Probability and Statistics**

Description: The goal of the Introduction to Probability and Statistics continuous learning module is to provide participants with a basic introduction and understanding of probability and statistics, a crucial foundation for the Test and Evaluation (T&E) career field.

Who Should Take This Training: T&E career field.

Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 4 hours. 0 Continuous Education Units, 4 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

**CLE 301 Reliability and Maintainability**

Description: The Reliability and Maintainability of military systems are integral elements of mission success and major determinants of the total ownership cost. An important objective of defense acquisition programs is to ensure that weapons systems achieve their user-defined Reliability, Availability, and Maintainability (RAM) performance requirements. This module defines Reliability, Availability, and Maintainability (RAM); explores the significant influence of Reliability and Maintainability on systems; and provides practical techniques that may be applied in an acquisition program to achieve the desired levels of Reliability and Maintainability.

Who Should Take This Training: T&E, LCL, ENG, IT & PM career fields.

Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 4 hours. 0 Continuous Education Units, 4 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

**CLM 013 Work-Breakdown Structure**

Description: This module addresses two fundamental and interrelated types of work-breakdown structures: the program work-breakdown structure that is developed by a program management office and the contract work-breakdown structure that is developed by a contractor. The work-breakdown structure summarizes data for successive levels of management and provides information on the projected, actual, and current status of the program. The work-breakdown structure keeps the program's status constantly visible so that the program manager, in cooperation with the contractor, can identify and implement changes necessary to assure desired performance, schedule, and cost.

Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 6 hours. 0 Continuous Education Units, 6 Distance or Continuous Learning Points, and 2 Reservist Retirement Points.
**CLM 016 Cost Estimating**

Description: This module focuses on basic cost-estimating tools and techniques. Cost estimates are one of the fundamental building blocks of the acquisition process. The cost estimate and its supporting budget are a part of the baseline against which a program’s progress and success are measured.

Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 8 hours. 0 Continuous Education Units, 8 Distance or Continuous Learning Points, and 2 Reservist Retirement Points.

**CLR 101 Introduction to the Joint Capabilities Integration & Development System**

Description: This module provides an overview of the Joint Capabilities Integration & Development System (JCIDS). The five lessons focus on terms, definitions, basic concepts, processes, and roles and responsibilities involved within JCIDS as well as JCIDS’ interaction with both the Defense Acquisition System (DAS) and Planning Programming Budgeting and Execution (PPBE).

Who Should Take This Training: This module is designed for DoD professionals who contribute to Requirements generation and capability development process to include JCIDS analysis, subject matter or domain expertise, document staffing and coordination and/or administrative support.

Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 3.5 hours. 0 Continuous Education Units, 4 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

**SYS 202 Intermediate Systems Planning, Research, Development, and Engineering, Part I**

Description: THIS COURSE IS EXPECTED TO RETIRE IN THE 2ND QUARTER FY17 TO BE REPLACED BY ENG 201. This distance-learning course provides an understanding of how the DoD’s systems engineering technical and technical management processes can be applied to a notional system within the context of the acquisition lifecycle. Course content includes the scope and role of systems engineering and its major technical inputs and outputs, timing of technical baselines, the role of technical reviews, important design considerations and other related areas throughout a systems’ life.

Who Should Take This Training: This course is part of the Level II certification training requirement for the Engineering (ENG) career field. Additionally, members of other career fields who require an understanding of how systems engineering is applied to systems acquisition and sustainment will benefit from this course.

Additional Course Information: This course is offered throughout the year as Distance Learning, and the course length is approximately 9 hours. 0.9 Continuous Education Units, 9 Distance or Continuous Learning Points, and 2 Reservist Retirement Points.

**TST 204 Intermediate Test and Evaluation (R)**

Description: This course builds upon professionals' knowledge, skills, and on-the-job experience relating to DoD test and evaluation (T&E) policies, processes, and practices. A number of problem-solving situations engage participants in the application of T&E concepts and principles. Course topics include the role of T&E in systems acquisition; T&E planning and the T&E strategy; T&E master plan development; managing a T&E program; and planning, conducting, and processing the results of T&E events.

Who Should Take This Training: This course is part of the Level II certification training requirement for the Test and Evaluation career field. Additionally, members of other acquisition career fields, including defense industry personnel who require an understanding of how T&E is applied to systems acquisition will benefit from this course.

Additional Course Information: This course is offered throughout the year as Resident Learning, and the course length is approximately 9.5 days. 6.5 Continuous Education Units, 65 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.


**Core Plus Development Guide Level II**

**CLB 007 Cost Analysis**

Description: Cost Analysis (excerpted from BCF-103) focuses on the basic cost analysis process. Cost estimates are one of the fundamental building blocks of any acquisition program. At the end of this module, you should be able to define various financial management terms as they relate to the defense acquisition process, determine when various cost estimates are required to be prepared, determine what estimating methodology is most appropriate, and determine what cost data is of interest to various program stakeholders.

Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 4 hours. 0 Continuous Education Units, 4 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

**CLE 015 Continuous Process Improvement Familiarization**

Description: Welcome to the Continuous Process Improvement (CPI) Familiarization module. This module will provide you with basic information concerning various CPI methodologies and tools and how their implementation can improve organizational performance to better support the Warfighter.

Who Should Take This Training: All military and civilian Department of Defense personnel and contractors supporting DoD activities.
Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 3 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

**CLE 017 Technical Planning**

Description: Technical Planning is one of the key Systems Engineering Technical Management Processes. This module presents essential and practical technical planning guidance to assist students in formulating a sound technical planning approach and how it should be integrated into the overall program planning process. Described and illustrated in this module is the integration of tools like Earned Value Management and Risk Management with systems engineering processes and tools like Requirements Management, Technical Baseline Management, and Technical Reviews into a comprehensive approach for the overall technical planning processes of a program.

Who Should Take This Training: SPRDE and PM career fields.

Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 3 hours. 0 Continuous Education Units, 3 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

**CLE 021 Technology Readiness Assessments**

Description: This module presents the TRA process as it relates to defense acquisition. The module will enable you to participate in a Technology Readiness Assessment and to determine how to use the TRA process to enhance program success. The module also provides TRA best practices.

Who Should Take This Training: This module is primarily intended for Program Office staff, S&T Staff and Subject Matter Experts.

Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 3 hours. 0 Continuous Education Units, 3 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

**CLE 037 Telemetry**

Description: This module will provide an overview of telemetry, including the components of telemetry systems and applications. Our coverage of the material begins with telemetry nomenclature, outlines a brief history of the field of telemetry, moves to the subsystems of a telemetry system, discusses the personnel who work with telemetry data, and touches upon range applications, testing, recording, display and analysis of telemetry data. The module concludes by discussing some related concepts, such as data processing systems.

Who Should Take This Training: T&E career field.

Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 6 hours. 0 Continuous Education Units, 6 Distance or Continuous Learning Points, and 2 Reservist Retirement Points.
**CLE 038 Time Space-Position Information**

Description: This Defense Test and Evaluation Profession Institute (DTEPI) learning module provides a general overview of Time Space-Position Information (TSPI) to include the importance of the error volume concept associated with each of the methods to be discussed. This is followed by detailed sections on radars, the Global Positioning System, optical systems, other TSPI systems, and a discussion of various scoring or miss-distance measurement systems.

Who Should Take This Training: T&E career field.

Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 6 hours. 0 Continuous Education Units, 6 Distance or Continuous Learning Points, and 2 Reservist Retirement Points.

**CLE 039 Environmental Issues in Testing and Evaluation**

Description: This Defense Test and Evaluation Profession Institute (DTEPI) learning module focuses on the broad environmental issues and related procedures affecting the Department of Defense (DoD) mission related to Testing and Evaluation.

Who Should Take This Training: T&E career field.

Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 5 hours. 0 Continuous Education Units, 5 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

**CLE 060 Practical Software and Systems Measurement**

Description: This Continuous Learning (CL) module provides an approach for and develops skills in obtaining and analyzing measurement data and in developing and assessing a measurement process. The module is intended for acquisition professions, suppliers, managers, technical leads, and measurement analysts.

Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 5 hours. 0 Continuous Education Units, 5 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

**CLM 013 Work-Breakdown Structure**

Description: This module addresses two fundamental and interrelated types of work-breakdown structures: the program work-breakdown structure that is developed by a program management office and the contract work-breakdown structure that is developed by a contractor. The work-breakdown structure summarizes data for successive levels of management and provides information on the projected, actual, and current status of the program. The work-breakdown structure keeps the program's status constantly visible so that the program manager, in cooperation with the contractor, can identify and implement changes necessary to assure desired performance, schedule, and cost.
Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 6 hours. 0 Continuous Education Units, 6 Distance or Continuous Learning Points, and 2 Reservist Retirement Points.

**CLM 016 Cost Estimating**

Description: This module focuses on basic cost-estimating tools and techniques. Cost estimates are one of the fundamental building blocks of the acquisition process. The cost estimate and its supporting budget are a part of the baseline against which a program’s progress and success are measured.

Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 8 hours. 0 Continuous Education Units, 8 Distance or Continuous Learning Points, and 2 Reservist Retirement Points.

**CLM 017 Risk Management**

Description: Risk is always a concern in the DoD systems acquisition process. The acquisition process itself is designed, to a large degree, to allow risk to be managed from conception to delivery of the system. Although risk is inherent in any program, risk management ensures managers take measures to assess and handle risks. This module focuses on tools and processes that can be used to manage risk on a defense system acquisition project.

Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 8 hours. 0 Continuous Education Units, 8 Distance or Continuous Learning Points, and 2 Reservist Retirement Points.

**CLM 035 Environmental Safety and Occupational Health — Lesson from PMT 352A**

Description: This module, excerpted from PMT 352A, focuses on the increased emphasis and importance of environmental safety and occupational health as it relates to acquisition management. Program managers must ensure their programs, regardless of acquisition category, comply with environmental safety and occupational health statutory and regulatory requirements.

Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 4 hours. 0 Continuous Education Units, 4 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

**CLV 016 Introduction to Earned Value Management**

Description: The Introduction to Earned Value Management module introduces the basics of earned value management (EVM) as it relates to acquisition program management. You will learn the five independent earned value variables and the three most common EVM metrics. At the conclusion of this module, you should be familiar with EVM-related laws passed by Congress, the Office of Management and Budget’s implementation of these laws, and current Department of Defense policy guidance regarding EVM requirements. Additionally, you should recognize how work scope, schedule, and resources are combined to establish the EVM performance measurement baseline.
Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 1 hour. 0 Continuous Education Units, 1 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**ISA 201 Intermediate Information Systems Acquisition (R)**

Description: Intermediate Information Systems Acquisition focuses on the application of DoD policies, concepts, and best practices for the management and acquisition of Information Technology systems. Exercises, lectures, group discussion, and labs are used to cover topics ranging from strategic planning, Cybersecurity, architectures, advancing technologies, requirements management, cost estimation, measurements, process maturity, quality, and testing, among other areas.

Who Should Take This Training: Individuals seeking Level II IT career field certification as well as for acquisition workforce personnel and industry equivalents that require an understanding of the management and acquisition of information systems within DoD.

Additional Course Information: This course is offered throughout the year as Resident Learning, and the course length is approximately 9.5 days. 7.2 Continuous Education Units, 72 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.


**LOG 101 Acquisition Logistics Fundamentals**

Description: The course provides a broad overview of the role of acquisition logistics in the systems acquisition life cycle and systems engineering processes. Modules cover the logistics-relevant aspects of requirements identification, life-cycle costing, integrated product and process development, product support including supportability in system design and supportability analysis, sustainment logistics including logistics processes, life cycle sustainment plan, management tools, and management functions and processes.

Who Should Take This Training: Professionals responsible for planning, establishing, and maintaining the logistics-support infrastructure for DoD systems and equipment in each phase of the acquisition life cycle.

Additional Course Information: This course is offered throughout the year as Distance Learning, and the course length is approximately 27 hours. 2.7 Continuous Education Units, 27 Distance or Continuous Learning Points, and 7 Reservist Retirement Points.

Prerequisites: ACQ 101, Fundamentals of Systems Acquisition Management.

**LOG 103 Reliability, Availability, and Maintainability (RAM)**

Description: Professionals who take this course will be able to understand the relationship between reliability, availability and maintainability (RAM) as a critical factor in design, performance, cost, and sustainment. The course addresses the cross-disciplinary actions of Program Management, Systems

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Engineering, Test & Evaluation and both acquisition logistics and sustainment to evaluate the impact of reliability and maintainability decisions. Stressing a conceptual approach, the course presents basic reliability, availability and maintainability terminology and engineering practices. It discusses current legislative and DoD policy that have invigorated systems engineering and logistics engineering processes to improve the requirements process, minimize risk through reliability growth programs and ensure effectiveness and suitability through developmental and operational test and evaluation.

Who Should Take This Training: Life Cycle Logisticians, Program Managers and Engineers. Encouraged for those in T&E.

Additional Course Information: This course is offered throughout the year as Distance Learning, and the course length is approximately 22 hours. 2.2 Continuous Education Units, 22 Distance or Continuous Learning Points, and 6 Reservist Retirement Points.

Prerequisites: ACQ 101, Fundamentals of Systems Acquisition Management.

**PQM 101 Production, Quality, and Manufacturing Fundamentals**

Description: Production, Quality and Manufacturing Fundamentals (PQM 101) is an entry level course that emphasizes basic production, manufacturing and quality assurance principles, policies, processes and practices used in DoD. The course exposes participants to manufacturing and quality scheduling, and control techniques, as well as production surveillance activities. Course content includes Production and Quality Assurance methods and procedures; Pre-Award and Post Award Fundamentals and tools; Contract Administration functions; Risk Management; Environmental, Health and Safety (ESH) Statutes and Responsibilities and Analytical Tools for continuous improvement. PQM 101 is part of the Level I certification training requirement for the Production, Quality, and Manufacturing career field.

Who Should Take This Training: This course is for industrial specialists, industrial engineers, quality assurance specialists, production officers, production specialists, contract administrators, and other acquisition personnel involved with or having duties in the areas of production, quality, or manufacturing. PQM 101 is part of the Level I certification training requirement for the Production, Quality, and Manufacturing career field.

Additional Course Information: This course is offered throughout the year as Distance Learning, and the course length is approximately 16 hours. 1.6 Continuous Education Units, 16 Distance or Continuous Learning Points, and 4 Reservist Retirement Points.

Prerequisites: ACQ 101, Fundamentals of Systems Acquisition Management.

**SPS 106 Database Maintenance**

Description: The SPS Database Maintenance course presents standard approaches to maintaining the database as well as information specific and/or unique to Procurement Desktop – Defense (PD³) and Standard Procurement System (SPS). The course will assist database administrators explore basic concepts of the system architecture, relevant services and tools for database maintenance, details about the server, and additional resources in support of their tasks.
Who Should Take This Training: Database Administrators.

Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 4 hours. 0 Continuous Education Units, 4 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

Test & Evaluation Core Certification Standards Level III

**CLB 008 Program Execution**

Description: Program Execution describes the budget execution process, including the legal concerns and potential impact of poor budget execution. At the end of this module, you should be able to describe the apportionment process (including rules for deferral and rescission), describe the funds execution process and laws that govern it, identify the purposes and contents of obligation and expenditure plans, and identify rules for reprogramming.

Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 3 hours. 0 Continuous Education Units, 3 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

**CLB 009 Planning, Programming, Budgeting, and Execution and Budget Exhibits**

Description: PPBE and Budget Exhibits focuses on explaining the Planning, Programming, Budgeting and Execution (PPBE) process, including the relationship of each phase to the systems acquisition process. At the end of this module, you should be able to recall the primary purpose of each of the phases of PPBE, identify the inter-relationship between PPBE and the Defense Acquisition system, and identify the purpose content and dimensions of the Future Years Defense Program (FYDP).

Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 3 hours. 0 Continuous Education Units, 5 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

**CLL 015 Product Support Business Case Analysis (BCA)**

Description: This module provides an overview of DoD’s policy, guidance, and application of Product Support BCA. The primary focus of the module is the structure, format, process, and methodology of Product Support BCA. In addition, the module addresses the application of Product Support BCA in the DoD context, which is currently oriented toward the use of Product Support BCA to support best value selection of weapon system program product support strategies using performance-based logistics.

Who Should Take This Training: This module is primarily intended for acquisition and logistics professionals.

Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 3 hours. 0 Continuous Education Units, 3 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.
**CLM 014 IPT Management and Leadership**

Description: This module introduces management and leadership concepts used to organize, manage, and lead an integrated product team. Integrated product teams are used throughout the acquisition process to open the cross-functional and cross-organizational lines of communication and are formed for the specific purpose of delivering a product for a customer.

Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 8 hours. 0 Continuous Education Units, 8 Distance or Continuous Learning Points, and 2 Reservist Retirement Points.

**CLM 031 Improved Statement of Work**

Description: The Improved Statement of Work module will help professionals improve statements of objectives, statements of work, and performance work statements that are developed and evaluated by all acquisition career fields, including System Planning, Research, Development, and Engineering; Production Quality Management; Life Cycle Logistics; Program Management; and Test and Evaluation. Statement of work purpose, preparation, evaluation, and lessons learned are presented in this module so professionals understand and appreciate the critical role of requirements development in the acquisition process.

Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 4 hours. 0 Continuous Education Units, 4 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

**CLV 016 Introduction to Earned Value Management**

Description: The Introduction to Earned Value Management module introduces the basics of earned value management (EVM) as it relates to acquisition program management. You will learn the five independent earned value variables and the three most common EVM metrics. At the conclusion of this module, you should be familiar with EVM-related laws passed by Congress, the Office of Management and Budget’s implementation of these laws, and current Department of Defense policy guidance regarding EVM requirements. Additionally, you should recognize how work scope, schedule, and resources are combined to establish the EVM performance measurement baseline.

Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 1 hours. 0 Continuous Education Units, 1 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**TST 303 Advanced Test and Evaluation (R)**

Description: Designed for senior DoD acquisition personnel, the Advanced Test and Evaluation (T&E) course is focused around leadership and management issues in a T&E environment. TST 303 involves facilitated discussion of current DoD policies, strategies, processes, and practices as they are applied and used for the planning and management of test and evaluation (T&E) for DoD systems. This course covers a variety of knowledge-building and interactive problem-solving skills using case studies developed around lessons learned from actual system acquisitions. Class discussion and study group efforts culminate in participant presentations based around case analysis and solution analysis. Knowledge and skills developed in this course will facilitate successful professional
participation as a T&E member in integrated planning and development activities for major programs.

Who Should Take This Training: Required for Level III certification in the T&E career field. Typical attendees include T&E leads for programs and Service/agency/facility T&E managers and engineers. Other senior technical and management personnel, including defense industry personnel, who plan, perform, and manage T&E tasks in support of acquisition will also benefit from the course.

Additional Course Information: This course is offered throughout the year as Resident Learning, and the course length is approximately 4.5 class days. 3.2 Continuous Education Units, 32 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

Prerequisites: CLB 009 Planning, Programming, Budgeting, and Execution and Budget Exhibits, CLM 014 IPT Management and Leadership and TST 204 Intermediate Test and Evaluation.

Core Plus Development Guide Level III

CLC 011 Contracting for the Rest of Us

Description: The “Contracting for the Rest of Us” module provides people who do not work in the Contracting career field with a basic knowledge of some of the essential processes and considerations that DoD Contracting professionals encounter to satisfy their customers’ requirements. The module also provides an introduction to some of the topics that are covered in greater depth in other Contracting continuous learning modules.

Who Should Take This Training: Non contracting personnel.

Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

CLE 009 ESOH in Systems Engineering

Description: This module integrates the environment, safety, and occupational health (ESOH) considerations into the Department of Defense (DoD) Systems Engineering process. It is based on the requirements of DoD Instruction (DoDI) 5000.02, Operation of the Defense Acquisition System, and identifies the key ESOH activities that are conducted as part of Systems Engineering during each phase of the system’s life cycle. DoDI 5000.02 requires programs to either eliminate identified hazards or reduce the associated risks to acceptable levels for hazards that cannot be eliminated.

Who Should Take This Training: This module is primarily intended for Systems Engineers, Project Managers, Logisticians, and Test and Evaluation personnel, ESOH subject matter experts, as well as other program technical Integrated Product Team members.

Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 3.5 hours. 0 Continuous Education Units, 4 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.
CLE 066 Systems Engineering for Systems of Systems

Description: This Continuous Learning Module (CLM) is intended for program managers, project managers, systems engineers, technical team leaders, logistic support leaders, and others who are supporting SoS work, particularly as part of an SE team in an SoS environment. The goal of this module is to provide a resource for those in the systems engineering community by introducing the insights gained from lessons learned by today's acquisition community with regard to the issues and approaches to systems engineering (SE) for systems of systems (SoS).

Who Should Take This Training: Defense Acquisition Workforce members.

Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 4 hours. 0 Continuous Education Units, 4 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

CLL 012 Supportability Analysis

Description: The overall goal of this cross-functional module is to advance the knowledge and understanding of Supportability Analysis and how it is employed through all phases of the defense acquisition process. This course will examine Supportability Analysis (SA) process with a particular emphasis on Logistics and how the Life Cycle Logician (LCL) will participate in the SA process and incorporate the results in product support planning.

Who Should Take This Training: This module is primarily intended for members of the life cycle logistics and systems engineering communities.

Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 4 hours. 0 Continuous Education Units, 4 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

CLM 032 Evolutionary Acquisition

Description: The Evolutionary Acquisition module is designed to introduce professionals to the ideas and principles of evolutionary acquisition, and teach professionals how to apply them in a rapidly changing environment.

Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 3.2 Continuous Education Units, 32 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

CLR 151 Analysis of Alternatives

Description: This module presents the process used by the Department of Defense to conduct an Analysis of Alternatives in support of requirements, system acquisition and resourcing. The AoA is the analytical process that DoD organizations use to assess and prioritize potential materiel solutions to a validated military capability need.

Who Should Take This Training: This module is designed primarily for individuals who lead or directly support Analyses of Alternatives (AoAs). The intended audience encompasses individuals in the DoD's and defense industry's requirements, acquisition and resourcing communities.
Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 3 hours. 0 Continuous Education Units, 3 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

**CLR 250 Capabilities-Based Assessment**

Description: CLR 250 is a comprehensive introduction to planning and organizing Capabilities-Based Assessments (CBAs). The module contains four lessons: CBA Definitions, Pre-Planning Research, CBA Team Building and Planning, and the CBA Study Phase. Graduates will have the knowledge, skills, and abilities to conduct and support effective and efficient Capabilities-Based Assessments (CBAs) in support of the Joint Capabilities Integration and Development System (JCIDS).

Who Should Take This Training: Professionals assigned to lead or to participate in CBAs.

Additional Course Information: This course is offered throughout the year as Continuous Learning, and the course length is approximately 5 hours. 0 Continuous Education Units, 4 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

**ENG 202 Applied Systems Engineering in Defense Acquisition, Part II (R)**

Description: This course allows students to use the DoD systems engineering processes and techniques learned in SYS 202. Participants will work in integrated product teams and apply systems engineering technical processes and technical management processes to a defense system as it gets developed across the various phases of the acquisition lifecycle.

Who Should Take This Training: This course is part of the Level II certification training requirement for the Engineering (ENG) career field. Additionally, members of other career fields who require an understanding of how systems engineering is applied to systems acquisition and sustainment will benefit from this course.

Additional Course Information: This course is offered throughout the year as Resident Learning, and the course length is approximately 4.5 class days. 3.6 Continuous Education Units, 36 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.


**PMT 251 Program Management Tools Course, Part I**

Description: Program Management Tools provides application skills needed in a program office as an integrated product team lead. It is a follow-on course to ACQ 203 and is designed to enhance journeyman-level skills. This course prepares defense acquisition professionals for work in the Program Offices and for the Program Management Office Course, PMT 352, Parts A and B.

Who Should Take This Training: This course is designed for military officers O-3 through O-4, and civilians, GS-12 through GS-13, in the Program Management career field.

Additional Course Information: This course is offered throughout the year as Distance Learning, and the course length is approximately 20 hours. 2 Continuous Education Units, 20 Distance or Continuous Learning Points, and 5 Reservist Retirement Points.
PMT 257 Program Management Tools Course, Part II

Description: Program Management Tools provides application skills needed in a program office as an integrated product team lead. It is a follow-on course to PMT 251 and is designed to enhance journeyman-level skills. This course prepares defense acquisition professionals for work in the Program Offices and for the Program Management Office Course, PMT 352, Parts A and B.

Who Should Take This Training: This course is designed for military officers O-3 through O-4, and civilians, GS-12 through GS-13, in the Program Management career field.

Additional Course Information: This course is offered throughout the year as Facilitated/Online Learning, and the course length is approximately 20 hours. 4.3 Continuous Education Units, 43 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.


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WSM 002 Risk Management Workshop

Description: Provides an overview of risk management and explores a step-by-step process to identify, evaluate, and develop risk-handling strategies, allowing the student to effectively perform and communicate risk planning.

Who Should Take This Training: A diverse integrated team(s) working on a program or some aspect of a program should attend. (Ideal size of each team is 5-6 people, but can accommodate each team at 8-10 key people. There may be multiple teams from a program office attending the workshop. (Max 40 people).

Additional Course Information: This course is offered throughout the year as Resident Learning, and the course length is approximately 9.5 classroom days. 7.7 Continuous Education Units, 77 Continuous Learning Units, 0 Reservist Retirement Points.

WSM 005 Integrated Baseline Review Workshop

Description: Reviews the Integrated Baseline Review (IBR) process—which was developed to assess the reasonableness, adequacy, and accuracy of this baseline plan—and provides tailored feedback on how best to conduct an IBR for a student’s particular project.

Who Should Take This Training: All acquisition personnel who are overseeing or participating as members of an IBR team should attend.
Additional Course Information: This course is offered throughout the year as a Workshop, and the course length is approximately 2 classroom days. 0 Continuous Education Units, 14 Continuous Learning Units, 0 Reservist Retirement Points.

**WSM 011 Acquisition Program Transition Workshop**

Description: Emphasizes better government and industry teaming after contract award, and is tailored to match the specific needs of the each program.

Who Should Take This Training: Key member of government and industry program teams shortly after contract award.

Additional Course Information: This course is offered throughout the year as a Workshop, and the course length is approximately 3.5 classroom days. 0 Continuous Education Units, 25 Continuous Learning Units, 0 Reservist Retirement Points.

**WSM 012 Service Acquisition Workshop (SAW)**

Description: A Service Acquisition Workshop (SAW) is a facilitated workshop built around a specific acquisition and its multi-functional integrated process team (MFIPT). The workshop walks the complete team through the service acquisition process from beginning to end as detailed the DoD Guidebook for the Acquisition of Services. For more complex, large dollar value, or high interest acquisitions the SAW is conducted as a multi-phase consulting engagement over the course of the sourcing activities. The duration of less complex SAWs generally takes four days to complete. The SAW facilitation team mentors and guides the MFIPT in developing their acquisition planning, market research, performance requirements, request for proposal, source selection, and contractor performance assessment planning and execution documents. For the requirements definition phase the Acquisition Requirements Roadmap Training (ARRT) tool is used to facilitate the development of high level objectives, task statements, performance standards and contractor assessment methods in a structured, disciplined and repeatable manner so that requirements are clear, concise and understandable to all stakeholders, including potential offerors.

Who Should Take This Training: The members of the acquisition team should participate, but the following must be present and participate; program manager, contracting officer and CORs. Staff functions, higher headquarters representatives are also welcome to participate. Without a commitment to have the key members of the acquisition team participate the workshop will not be held.

Additional Course Information: This course is offered throughout the year as a Workshop, and the course length is approximately 4 classroom days. 0 Continuous Education Units, 28 Continuous Learning Units, 0 Reservist Retirement Points.

**WSE 015 JCTD Execution (How to Run A JCTD)**

Description: Facilitated training Workshops (COHORT) focused on providing prospective and current Joint Capabilities Technology Demonstrations (JCTD) Integrated Management Teams (IMT) the tools to be successful in the formulation, planning and/or execution of their specific JCTDs. Workshops are
tailored to meet each IMT’s training objectives, JCTD knowledge, planning maturity and execution timeline. Workshops are available to complement the entire JCTD life-cycle; JCTD Proposal Development, detailed JCTD Planning and Documentation (Implementation), and JCTD execution (integration, assessment, and transition). Workshops also address the necessary programmatic, technical, operational, and transition management skills and know-how students need to become effective, productive members of the JCTD execution team.

Who Should Take This Training: JCTD IMT members and supporting personnel, to include contractors, who are involved in the formulation, planning, managing, executing, &/or supporting of a JCTD. Workshops are designed to train in-tact teams, working on the same JCTD.

Additional Course Information: This course is offered throughout the year as a Workshop, and the course length is approximately 2.5 classroom days. 0 Continuous Education Units, 18 Continuous Learning Units, 0 Reservist Retirement Points.

WSE 016 JCTD Transition Management Workshop

Description: This course is designed for newly appointed Joint Capability Technology Demonstrations (JCTD) team members. The course will cover the objectives of a JCTD, the associated processes and the resources to conduct a JCTD. Topics include: Strategic Overview and Processes; Funding; Contracting; Intro to JCIDS, PPBE and Defense Acquisition System; Roles of OE, OM, TM and XM; and Training Opportunities.

Who Should Take This Training: Newly appointed members of JCTD teams (technical, operational and transition managers) who need additional knowledge on the demands of the acquisition environment and who want more information on ASD(R&E) expectations regarding JCTD management.

Additional Course Information: This course is offered throughout the year as a Workshop, and the course length is approximately 2.5 classroom days. 0 Continuous Education Units, 18 Continuous Learning Units, 0 Reservist Retirement Points.
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NAVSEA’s mission is to design, build, deliver and maintain ships and systems on time and on cost for the U.S. Navy. NAVSEA is comprised of command staff, headquarters directorates, affiliated Program Executive Offices (PEOs) and numerous field activities. Together, they engineer, acquire, build, test and maintain ships, submarines and combat systems that meet the Fleet’s current and future operational requirements.

NAVSEA is the largest of the Navy's five system commands. With a fiscal year budget of nearly $30 billion, NAVSEA accounts for one quarter of the Navy’s entire budget. With a force of 60,000 civilian, military and contract support personnel, NAVSEA engineers, builds, buys and maintains the Navy’s ships and submarines and their combat systems. To accomplish this, NAVSEA manages 150 acquisition programs and manages foreign military sales cases that include billions of dollars in annual military sales to partner nations. The NAVSEA organization has 33 activities in 16 states.

The Research and Systems Engineering T&E competency resides within the Naval Systems Engineering Directorate, SEA 05, who is responsible for providing the engineering and scientific expertise, knowledge, and technical authority for the products the command oversees. Besides ships and systems, NAVSEA 05 has the further responsibility of establishing and enforcing technical authority in combat system design and operation, and the technical standards used by the organization to ensure systems are engineered effectively, and that they operate safely and reliably.

For registration and availability of NAVSEA T&E-related courses listed below, unless specified otherwise, please contact Anabell Ramos, Training Specialist, NSWC Port Hueneme, 805-228-0338, anabell.ramos@navy.mil.

**Submarine Combat Systems**

Description: The course covers current, as well as future, trends in submarine combat systems including: a brief review of submarine operations and trends from the Cold War period including key events and lessons learned, and key documents and events during the Post-Cold War adjustment period 1990 – 2000) The key documents include: Navy Vision Statement “Forward.....from the Sea”, the series of Defense Science Board Studies, Joint Vision 2010/2020 and many others. The course will cover advanced SSN/SSGN payloads and the Navy experimentation process. The recommendations of the CNO’s ASW Team A and B will be addressed in terms of the future implications.

Who Should Take This Training: Engineers, scientists, technicians.

Additional Course Information: Unless otherwise noted, for registration and availability please contact Ms. Kim Hall, NUWC Division Newport, (401) 832-3904, kim.hall1@navy.mil.

**Scientist to Sea Program**

Description: Scientist at Sea offers context-based training reinforced with a deck plate experience in an actual warfare environment (submarine or surface ship) to give more personnel an understanding of platforms, systems and fleet operations. Through collaboration and sharing of experiences, the participants will gain an understanding of the fundamentals of naval warfare from the sensor to the shooter.
Who Should Take This Training: New employees (less than 3 years at NUWC) and an Acquisition Workforce (DAWIA) member.

Additional Course Information: This course involves TDY to an operational asset at sea. The course/program length may vary but is about one week for 40 Continuous Learning Points.

**Introduction to Electro-Optic & Infrared Sensors (EO/IR)**

Description: This course focuses on EO/IR technology and its applications in defense systems. Whether a stand alone or in a support role, EO/IR proliferation into modern systems necessitates a broader understanding of this technology by program and project managers, systems analysts, engineers and technicians who are involved directly in EO/IR bases systems or work with multimode systems employing EO/IR technology in some of its functions.

Who Should Take This Training: Project managers, systems analysts engineers and technicians who are involved directly in EO/IR base systems.

Additional Course Information: This course is held in classroom and length is 3 days or 18 hours for 18 Continuous Learning Points.

**Introduction to Systems Engineering**

Description: This course is designed to introduce the student to the basic principles, processes and products of Systems Engineering. Present a systematic approach for the development and management of complete systems utilizing a structured, disciplined, and documented systems engineering approach, based on an integrated product team concept. The approach enables multidisciplinary teamwork and product development, including reliability, maintainability, human factors, safety, manufacturing and test needed to satisfy operator requirements.

Who Should Take This Training: Engineers, scientists, managers and technicians.

The seminar consists of two days (16 hours) classroom time utilizing two instructors, both of which have over 35 years’ experience in design, build, integration and test of US Navy surface combatants. The course will include student team exercises involving each of the topics on the course outline.

**Radar Signal Processing**

Description: This course introduces the principles of radar systems, as well as their missions and objectives, rendering it an invaluable resource for executives, program managers, system analysts, engineers, simulation programmers and others who manage, design or operate radar based systems. Although this course has no prerequisites, college level math will be helpful.

Who Should Take This Training: Engineers, scientists, managers and technicians.

**Applied Design of Experiments for Test & Evaluation**

Description: This course provides a complete end-to-end instruction on the use of Test & Evaluation in system and product development. Included is a full discussion on statistics principles and hypothesis testing, including test design and test data analysis.
Who Should Take This Training: The course is aimed at project personnel who need to work within a test & evaluation environment. Test Engineers; Design Engineers; Systems Engineers; Project Engineers; Technical Team Leaders; System Support Leaders; Technical and Management Staff.

Additional Course Information: This course is held in classroom and length is 3 days.

**Applied Systems Engineering**

Description: Today’s complex systems present difficult challenges to develop. From military systems to aircraft to environmental and electronic control systems, development teams must face the challenges with an arsenal of proven methods. Individual systems are more complex, and systems operate in much closer relationship, requiring a system-of-systems approach to the overall design. This two-day workshop presents the fundamentals of a systems engineering approach to solving complex problems. It covers the underlying attitudes as well as the process definitions that make up systems engineering. The model presented is a research-proven combination of the best existing standards and is aimed at project leaders, technical team leaders, engineers, and others participating in system development.

Who Should Take This Training: Acquisition logisticians; Logistic support engineers; Specialty engineers; Configuration managers; Project leaders; Technical team leaders; Design engineers (software, electrical, mechanical, and other).

Additional Course Information: This course is held in classroom and length is 2 days.

**Design of Experiments (DOE) Overview for Supervisors**

This introductory course demonstrates a powerful methodology for test and evaluation: design of experiments (DOE). The case for DOE begins with a presentation of the central challenge of test – how to draw enough samples to make the correct fielding decision, while simultaneously testing across a broad test space. DOE answers four fundamental questions: how many trials, under what conditions, executed in what order, and what are defensible conclusions? DOE history is discussed along with a series of case studies to illustrate how it works. The course features test examples showing how DOE often reduces testing cost by 30-80% while increasing knowledge; conversely the course discusses several cases where tests had too few assets and should have been augmented. The concluding portion of the course addresses challenges of leading change that must be dealt with to successfully alter the way an organization typically conducts tests.

Who Should Take This Training: Engineers, Design Engineers, Management, and T&E personnel.

Additional Course Information: This course is held in classroom.

Prerequisites: Some knowledge of probability and statistics would be helpful but not necessary.

**Agile Scrum Team Training**

Description: The course focuses on the entire team, including Scrum Master, Product Owner, Business Analyst, Testers, Developers and Architects. The team-based scrum training will help you understand your role within the Scrum team structure and equip you with knowledge. Organizations need to be "Agile;" it is no longer an option. They must be able to deliver new or enhanced products and systems as dictated by customers, competition, and business pressures. As the environment they operate within changes, they need to be flexible while adhering to their purpose. As they flex, they need to be both predictable and efficient, while controlling risk.
This class gives an end-to-end practice and understanding of Agile Fundamentals (concepts, values, principles and practices) and a detailed explanation of scrum that allows teams to deliver value to customers faster and with less risk than traditional project management.

Who Should Take This Training: Engineers and T&E personnel.

Additional Course Information: This course is held in classroom and length is 2 days.

**Agile Leadership Workshop**

Description: Finding your leadership style through the prism of established leadership models; evaluating prevalent leadership models ;The Agile Leadership Model; building your analytical and behavioral skill sets; defining the behaviors and values of the Agile leader ;adding business value to the organization; organization mission; appreciation diverse organizational cultures.

Who Should Take This Training: Engineers and T&E personnel, managers, project managers.

Additional Course Information: This course is held in classroom and length is 3 days.

**Agile Scrum Boot Camp**

Description: Immersion based training experienced that is meant to familiarize participants with the concepts, methods and practical techniques of agile development. From the history of agile and the fundamentals of strategic planning, through story writing, execution and delivery, the Boot camp has been designed to take teams through complex cycle of a typical agile development project.

Who Should Take This Training: Engineers and T&E personnel, managers, project managers.

Additional Course Information: This course is held in classroom and length is 2 days.

**SysML Training**

Description: This course provides a complete end-to-end instruction on using the System Modeling Language(SysML) to support the specification, analysis, design, verification, and validation of a broad range of systems and systems-of-systems (SoS). It covers the complete syntax and all nine diagram kinds, within the context of systems engineering tasks. It explicitly covers the concepts of a Model-Based Systems Engineering (MBSE) approach from requirements through validation.

Who Should Take This Training: System engineers, Design engineers, Technical team leaders, Project managers.

Additional Course Information: This course is held in classroom and length is 3 days.

**Shipboard Fiber Optics**

Description: The course provides knowledge which will enable evaluation of system upgrades with improved data transfer to overcome present day problems. This course provides an understanding of the theory of optics and its application in the transmission of data along fiber optic cabling. Most courses on fiber optic concentrate on the most common use of fiber optics, in the transmission of telecommunication signals. This course focuses on the review of Fiber Optics with a technical background and a functional understanding of the discipline.
Who Should Take This Training: Engineers; Design Engineers; Technical Team Leaders; Project Managers.

Additional Course Information: This course is held in classroom and length is 3 days.

**Engineering Systems for Navy Interoperability**

Description: This course reviews the latest principles for systems engineering, how to apply them to the interoperability of Naval Battle Forces and DOD interoperability initiatives. This course provides a comprehensive four-day coverage of the end-to-end concepts and methods of systems engineering. This workshop is a review of the latest principles for systems engineering in context of standard development cycles, with realistic practice on how to apply them.

Who Should Take This Training: System Engineers; Design Engineers; Technical Team Leaders; Project Leaders; Acquisition logisticians; Logistic support engineers; configuration managers.

Additional Course Information: This course is held in classroom and length of course is 4 days.

**TTWCS Operator and Maintainer Course (For Design Engineers)**

Description: Goal/Purpose of this training is to ensure the students of this training are able to properly power-up the system to execute hardware level testing, investigate Fleet anomalies, verify interfaces and connectivity by creating and executing a simulated Tomahawk strike, properly maintain the hardware and software, and gracefully power-down the equipment.

Provide in-class and hands-on training on the operation and maintenance of the TTWCS v5.4.0.1 system, which includes but not limited to: 1) the development or receipt, processing, planning, and execution of a Tomahawk strike package; 2) The planning, development, and execution of a training scenario using the Coordinated Training Node (CTN) systems; 3) The loading, setup (accounts, networks), and configuration of Tomahawk software for the applicable systems within the Tomahawk Equipment Cabinet (TEC), Tomahawk Command and Control System (TC2S) Communications (TCOMMS) rack, and Mission Distribution System (MDS) equipment; 4) General system maintenance of the software per applicable Maintenance Requirement Cards (MRCs); 5) General troubleshooting and maintenance of the TTWCS, ATDC, TWP, TCOMMS, and MDS hardware.

Who Should Take This Training: Engineers; Branch Engineers; Design Engineers; TTWCS Hardware Design Team Training required from the Tomahawk Training Contractor (SCCI).

Additional Course Information: This course is held in classroom and length of time is 1 to 2 weeks.

**Combat Systems Overview**

Description: Provide the understanding of the basic components that make up the surface navy combat systems and the allocation of detect, control, and engage functions to the components. Present a systematic approach for the development and management of complete Combat Systems utilizing a structured, disciplined, and documented systems engineering approach. The approach enables multidisciplinary teamwork and product development needed to satisfy warfighter requirements.

Who Should Take This Training: Engineers; Logistic support engineers; Specialty engineers; Configuration managers; Project leaders; Technical team leaders; Design engineers (software, electrical, mechanical, and other).
Technical Writing

Description: This course should provide participants with the skills to produce: a wide variety of clear and concise technical documents, plan, draft and edit technical matter, understand basic sentence structure and grammar required in technical writing, organize and interpret data for the reader to understand, analyze technical document for effectiveness, build outline to create structure making data readily accessible. Equip participants with practical application of technical writing Techniques to deliver effective technical documents to both technical and non-technical audiences. The course shall cover the following: patterns of technical writing, organizing technical information, technical report elements and formats, writing the first draft, writing abstracts, preparing Technical manuals, editing and proofreading techniques.

Who Should Take This Training: Engineers.

Additional Course Information: This course is held in classroom and length is 2 days.
NAVAIR's mission is to provide full life-cycle support of naval aviation aircraft, weapons and systems operated by Sailors and Marines. This support includes research, design, development, and systems engineering; acquisition; test and evaluation; training facilities and equipment; repair and modification; and in-service engineering and logistics support.

NAVAIR University (NAVAIRU) was established in 2013 to give the workforce the practical knowledge, experience, and tools to be successful at NAVAIR. The university includes nine colleges—eight competency-aligned colleges and one enterprise-aligned college. Courses are tailored to specific NAVAIR jobs, while the underlying framework and instructional processes draw heavily from recognized workforce training initiatives such as the College of Test and Evaluation (formerly Naval Aviation Test and Evaluation University (NATEU)), and the Business Financial Management and Comptroller College. NAVAIRU builds upon accredited programs offered by Defense Acquisition University (DAU) and other developmental programs, like the Office of Personnel Management’s (OPM) Human Resources University, by adding practical hands-on opportunities to expand students’ knowledge base and prepare them for successful careers. NAVAIRU is also the best resource for earning continuous learning credits. Regardless of professional background, students are encouraged to enroll in courses offered by any NAVAIRU college, if they meet the prerequisites. This type of cross-training will enable the NAVAIR workforce to better navigate the seams, improve quality and speed, and keep up with the latest evolving technologies.

For registration and availability of T&E-related courses listed below, unless specified otherwise, please contact Kerstin Howard, Administrator, College of Test and Evaluation (CT&E), NAVAIR, 301-757-6788, email: kerstin.howard.ctr@navy.mil.

**School of Developmental T&E**

**CTE-AVM-101 AC-Coupling, Gains, And Offsets**

Description: This training describes how a signal is conditioned before filtering and digitizing the signal. The AC and DC portion of a signal is illustrated before showing how AC coupling removes the DC portion of the signal. The calculation of gain and offset is covered in order to maximize the input range to the Analog to Digital Converter (ADC).

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom, 1.25 hours.

Who Should Take This Training: T&E personnel.
CTE-AVM-102 Acceleration And Vibration

Description: This training discusses the many accelerometer technologies available, the environmental factors that affect acceleration measurement, and the importance of proper orientation. AC and DC responses of accelerometers are presented along with measurement validation.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom, 1.75 hours.

Who Should Take This Training: T&E personnel.

CTE-AVM-103 Acquiring Selected 1553 Data Within A Chapter 4 Stream

Description: This training covers the 1553-bus catalog information needed to capture selected 1553 words in a Chapter 4 Pulse Code Modulation (PCM) stream. Students discuss the 1553 message structure and how a bus monitor triggers command words to find the particular parameter. Students observe programming the BIM-553 card using TTCWare along with the proper sampling of 1553 data. Finally, the course covers the validation of 1553 parameters.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom, 1.75 hours.

Who Should Take This Training: T&E personnel.

CTE-AVM-104 Advanced Range Telemetry (ARTM)

Description: This course discusses the various modulation schemes available in ARTM transmitters including: Pulse Code Modulation using Frequency Modulation (PCM/FM), Shaped Offset Quadrature Phase Shift Keying (SOQPSK), and Continuous Phase Modulation (CPM). Each scheme is described in terms of bandwidth efficiency. In addition, the course discusses the various Phase Shift Keying (PSK) modulation schemes in detail, Forward Error Correction and its trade-offs, and concludes with lessons learned.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom, 1.25 hours.

Who Should Take This Training: T&E personnel.
**CTE-AVM-105 Airborne Separation Video System (ASVS)**

Description: This training describes the operation of DRS Technologies’ high-speed video system, explaining the individual elements of the system along with their function; how the camera operates in terms of triggering and capturing images along with how the images are stored on the integrated hard drive; and how the cameras are configured for programming events using Ground Interface Unit (GIU) client software screenshots to illustrate. In addition, the students discuss telemetry of the RS-170 video. The course concludes with an overview of the history of Aircraft Instrumentation Division (AIDs), including the HotLink bus and how workmanship of the wiring played a key role in getting it to operate properly.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom, 2 hours.

Who Should Take This Training: T&E personnel.

**CTE-AVM-106 Angular Acceleration And Velocity, And RPM**

Description: This training reviews the transducer types that sense motion in an angular direction using examples such as the Six Degree of Freedom (6DoF) package and by measuring the Revolutions Per Minute (RPM) of a rotating structure.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom, 0.5 hours.

Who Should Take This Training: T&E personnel.

**CTE-AVM-107 Binary BIT Representation**

Description: This training describes how ones and zeros are represented electrically in Pulse Code Modulation (PCM) streams. Students also discuss randomization of data and its use in telemetry streams.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom, 0.5 hours.

Who Should Take This Training: T&E personnel.

**CTE-AVM-108 Calibrations And Curve Fitting Of Point Pairs**

Description: This training covers how the relationship between counts and Engineering Units (EUs) is determined from the various methods used to create point pairs in an on-aircraft calibration, the
definition of decision-quality data and illustrates the traceability of EUs back to the National Institute of Standards and Technology (NIST). Students discuss curve fitting—how the coefficients are created and how to measure the quality of the curve fit. Linear and higher-ordered curve fits are presented with examples.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom, 3 hours.

Who Should Take This Training: T&E personnel.

CTE-AVM-109 Calibration And Verification Of Strain Gage Installations

Description: This training is the third topic in the series on strain gage measurements and covers the data acquisition side. The course begins with a review of strain gage operation, and then moves to a discussion of the differences in calibration between the two strain gage measurements, microstrains, and loads. Finally, students discuss Technical Standard Operating Procedures TSOP-029 with regard to bridge circuit verification, calibration procedures, shunt calibrations, and troubleshooting strain gage circuits.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom, 1.5 hours.

Who Should Take This Training: T&E personnel.

CTE-AVM-110 Conditioning Of Audio And CVSD Encoding

Description: This training begins by showing students the various stages of audio conditioning and introducing methods of digitizing audio, which leads into the Continuously Variable Slope Delta (CVSD) audio encoding. The course highlights the importance of sampling, VFE-100 card programming, the difference in count values compared to other analog signals, and methods of audio playback.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom, 1.25 hours.

Who Should Take This Training: T&E personnel.

CTE-AVM-113 Discrete Parameter Measurements

Description: This training discusses the monitoring of the state of a switch, light, or bit. The BLS-148 settings are covered and how to program the card in TTCWare.

Program of Study: AVMI.
Vendor: CT&E.

Additional Course Information: Classroom and DVD, 0.5 hours.

Who Should Take This Training: T&E personnel.

**CTE-AVM-114 Flow Measurement**

Description: This training covers the flow turbine and the associated conditioners needed to measure fuel flow and the fuel used. The course reviews the various units of measure for flow and factors that affect the result; and rules of thumb for inserting a fuel flow turbine within a system to achieve accurate results. Discussion uses examples of various fuel flow measurements to illustrate the concepts.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom and DVD, 1.75 hours.

Who Should Take This Training: T&E personnel.

**CTE-AVM-115 Force, Stress, And Strain**

Description: This training defines and illustrates the differences between force, stress, and strain using Hooke’s Law, the stress-strain curve, elasticity, and deformation. The training concludes with various examples using free body diagrams.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom and DVD, 1.5 hours.

Who Should Take This Training: T&E personnel.

**CTE-AVM-116 Frequency Measurement Signal Conditioning**

Description: This training begins with how frequency is measured. Students are introduced to the various FPD-104 cards and their specific characteristics. Illustrations of the frequency and period mode operation show why the period mode is best to measure frequency in aircraft instrumentation applications. An example illustrates how to obtain the count to Engineering Unit (EU) relationship and how to program the card in TTCWare. The training concludes with an example of how measuring frequency using different technologies can yield different results.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom and DVD, 1.25 hours.

Who Should Take This Training: T&E personnel.
CTE-AVM-117 GPS And Its Application To Time Synchronization

Description: This training begins with an illustration of how a position is established using the distance from several satellites. Students discuss the structure of the Global Positioning System (GPS) 50-Hz Navigation/System Data from the satellite and how they are transmitted and received. The course explains the offset between Universal Time Coordinated (UTC) and GPS time, the definition of differential GPS and how it reduces errors in positional data, and finally the capabilities of the Teletronics Technology Corporation (TTC) GPS card with regard to programming in TTCWare.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom and DVD, 1 hour.

Who Should Take This Training: T&E personnel.

CTE-AVM-118 Grounding And Shielding Practices For Instrumentation Systems

Description: The training introduces the basics of grounding, shielding, and bonding. Discussions include grounding for safety, bonding of equipment, and the difference between the two. Students discuss ground references and how they can yield incorrect results due to ground loops and common mode voltages. Students review shield terminations with diagrams showing potential ground loops that introduce noise. The class concludes with a discussion on electro-magnetic interference (EMI) shielding.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom and DVD, 1.75 hours.

Who Should Take This Training: T&E personnel.

CTE-AVM-119 Grounding And Shielding For TTC Equipment

Description: This training applies the rules for grounding and shielding specifically to Teletronics Technology Corporation (TTCs) data acquisition hardware. The grounding scheme of the CAIS Data Acquisition Unit (CDAU) and Mini CAIS Data Acquisition Unit (MCDAU) is covered along with proper shielding of signal wiring and Electromagnetic Interference (EMI) shielding. Signal referencing is illustrated through numerous examples.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom and DVD, 1.5 hours.

Who Should Take This Training: T&E personnel.
**CTE-AVM-120 High Speed Imaging**

Description: This training generically covers high-speed imaging. The elements of the system are covered along with a short history of high-speed imaging. Color imaging with the use of filtering pixels is explained along with several definitions of terminology used.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom and DVD, 1 hour.

Who Should Take This Training: T&E personnel.

**CTE-AVM-121 Imaging Basics I**

Description: This training introduces imaging from a historical perspective. A discussion on the properties of light and how the eye perceives images follows. Next the first film cameras to high-speed video are covered with example photos.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom, length varies.

Who Should Take This Training: T&E personnel.

**CTE-AVM-122 Imaging Basics II**

Description: This training covers the terminology used in imaging and the basic principles of capturing an image. The lens is discussed and shown how its shape affects the image. Aperture is explained and its affect on depth of field and light intensity. Examples of camera settings are used to illustrate the resulting image. Film characteristics are covered before leading into modern Charged Coupled Device (CCD) sensors and how they operate.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom and DVD, 3 hours.

Who Should Take This Training: T&E personnel.

**CTE-AVM-123 Imaging Basics III**

Description: This training covers standard video cameras along with the signals that make up the frames of images. Examples of mounting video cameras on an aircraft are shown.

Program of Study: AVMI.

Vendor: CT&E.
CTE-AVM-124 Instrumentation System Overview

Description: This training provides a very high level view of an instrumentation system. The various elements are reviewed along with the output Pulse Code Modulation (PCM) streams. The Aircraft Instrumentation Division (AID) Training Flowchart concludes the training, which shows the order of the AID Training Program.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom and DVD, 1 hour.

Who Should Take This Training: T&E personnel.

CTE-AVM-125 Instrumentation Power System Design

Description: This training covers the practices of properly protecting power circuitry in an instrumentation system. Training starts with the introduction of the RD 4790.1E and how fuses and circuit breakers operate. Next, some examples are used to illustrate how to determine the proper circuit breaker rating. A discussion on the location of circuit breakers and proper wire gage in production power taps and power distribution units are shown. Determining the current capacity of a wire is discussed followed by the use of battery power.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom and DVD, 0.5 hours.

Who Should Take This Training: T&E personnel.

CTE-AVM-126 IRIG-106 Chapter 4 - PCM Map And Structures

Description: The basics of Time Division Multiplexing are introduced along with how measured signals are digitized. Terms such as Bit Rate, Words, Minor Frames, Major Frame, and Sub Frames are defined. The structure of a Pulse Code Modulation (PCM) map is shown along with word numbering, sub frame identification and frame sync patterns. Obtaining multiple sample rates within a PCM frame is shown. Finally an example is shown on how to create a PCM map from scratch given measurements of different frequency content.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom and DVD, 1.75 hours.
Who Should Take This Training: T&E personnel.

**CTE-AVM-127 IRIG-106 Chapter 8 - Digital Data Bus Acquisition Formatting Standard**

Description: This training covers the format of a Chapter 8 Pulse Code Modulation (PCM) stream used for 100% acquisition of digital data busses. The training begins with describing bus monitors and leads into the details of the Chapter 8 PCM format. First, 1553 word structures are illustrated and how each one is mapped into a Chapter 8 word. Later in the training ARINC-429 is discussed. The merging of a Chapter 4 stream into the Chapter 8 stream is also illustrated. Finally, examples of actual Chapter 8 words are decoded by hand to give a better understanding of the word structure.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom and DVD, 2.5 hours.

Who Should Take This Training: T&E personnel.

**CTE-AVM-128 Measuring Electrical Signal Characteristics**

Description: This training covers the measuring of voltage and current. The amplitude, frequency, and phasing of a sine wave is discussed and the differences between Peak, Peak-to-Peak, and Root Mean Squared (RMS) are described. The RMS-116 and PMC106 card programming in TTCWare is illustrated in screen shots.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom and DVD, 0.75 hours.

Who Should Take This Training: T&E personnel.

**CTE-AVM-129 MIL-STD-1553 Bus Theory And Practical Applications**

Description: This training provides the theory of the 1553 bus’s structure and electrical specifications. The protocol of the message structure is shown along with the various types of words. The bus coupler is described and it’s use for tapping into the bus to monitor the bus traffic. Troubleshooting techniques are reviewed in order to obtain the correct data in the instrumentation bus monitor. A high level overview of the CONDOR 1553 bus tools concludes the training.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom and DVD, 2.5 hours.

Who Should Take This Training: T&E personnel.
CTE-AVM-130 Numbering Systems And Representations

Description: This training covers the many types of numbering systems used in our data systems. Binary, 2’s Complement, Octal, Hex, Binary Coded Decimal, and Decimal conversions are reviewed. Examples of the use of these numbers are shown throughout the training. Teletronics Technology Corporation (TTCs) two’s complement conversion is explained. Finally, a number game, “The Mystery Calculator”, is shown and the trick is revealed to be something that should be familiar.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom and DVD, 1 hour.

Who Should Take This Training: T&E personnel.

CTE-AVM-131 Oscilloscope Basics

Description: This hands-on class prepares users on how to measure signals with an oscilloscope. The various controls on an oscilloscope are reviewed and how it affects the display of the signal. Measurements of voltage, period, and frequency are made on a sine wave. Later various signal types found on an instrumentation system such as Pulse Code Modulation (PCM) bit clock, Inter-Range Instrumentation Group (IRIG)-B time, and audio are measured.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom, 6 hours.

Who Should Take This Training: T&E personnel.

CTE-AVM-132 Position Measurements

Description: This training covers contact and non-contact position measurements. Common rotary and linear sensors (Rotary Variable Differential Transformer (RVDT), potentiometers, Linearly Variable Differential Transformer (LVDT), and synchros) are described. The importance of obtaining linearity between the position and the resulting voltage is discussed. This training contains many photos of the various mounting configurations on different aircraft. Safety issues are covered when attaching to flight controls.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom and DVD, 1.5 hours.

Who Should Take This Training: T&E personnel.
CTE-AVM-133 Pre-Modulation Filtering For PCM/FM Systems

Description: This training illustrates why Pulse Code Modulation (PCM) streams are filtered before being FM modulated. The frequency content of a square wave begins the training, which leads into the PCM stream’s bandwidth. The Bessel filter’s characteristics are presented to show why it is best for filtering PCM streams. Telemetry (TM) spectrums of filtered and non-filtered PCM streams are illustrated to show bandwidth savings. Finally, the implementation of pre-modulation filtering on a CAIS Data Acquisition Unit (CDAU) and Mini CAIS Data Acquisition Unit (MCDAU) are shown.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom and DVD, 0.75 hours.

Who Should Take This Training: T&E personnel.

CTE-AVM-134 Pre Sample Filtering

Description: Pre sample filtering begins with illustrating the frequency content of analog signals. The time domain and frequency domain are discussed. Logarithms and the concept of the decibel (dB) are reviewed as it applies to the gain of an amplifier. The object of pre sample filters is defined before various types and implementations of filters are shown, leading to the use of the Butterworth filter for analog data. Concepts such as the poles of a filter, and how circuit components affect the frequency response of a filter are shown. Finally, how to select the proper cutoff frequency and how it affects the data within the pass band of the filter is described.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom and DVD, 2.5 hours.

Who Should Take This Training: T&E personnel.

CTE-AVM-135 Pressure Sensing

Description: The various units for pressure are covered along with their meaning. The theory of pressure measurement is discussed including Pascal’s Law and the difference between liquids and gasses. The various sensing elements and the technology used are explained. Pitot-static systems are covered showing several examples of aircraft installations.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom and DVD, 1 hour.

Who Should Take This Training: T&E personnel.
CTE-AVM-136 Proper Isolation Of Aircraft Signals

Description: This training reviews the paragraphs in the Aircraft Instrumentation Division (AID) Specification 4790.1 on electronic isolation of production signals. Various components used for isolation are shown along with how they work in various circuits. An example of analyzing a circuit when isolation is added is illustrated. Finally, tapping into other signals such as Global Positioning System (GPS) and avionics busses are shown.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom and DVD, 1.25 hours.

Who Should Take This Training: T&E personnel.

CTE-AVM-137 Sampling Theory

Description: This training illustrates the importance of properly sampling a band-limited signal. The Nyquist theory is explained along with examples of aliased data. Sampling to guarantee no aliasing is illustrated, resulting in an equation to determine the minimum sampling rate. Next, sampling to capture peaks of a signal with a defined confidence interval is shown followed with sampling for non-periodic signals.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom and DVD, 1.25 hours.

Who Should Take This Training: T&E personnel.

CTE-AVM-138 Significant Digits And Scientific Notation

Description: This training discusses the number of digits needed after the decimal point in calculations and resulting Engineering Unit (EU) values. The mathematical rules of significant digits are covered along with several examples. Scientific notation is introduced along with the various forms it takes in many applications. Finally, engineering notation is covered along with the various prefixes for large and small quantities.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom and DVD, 1 hour.

Who Should Take This Training: T&E personnel.
CTE-AVM-139 Spectrum Analyzer Basics

Description: This training covers the basic functions of a spectrum analyzer. The concept of a signal consisting of a sum of sine waves is illustrated before discussing the frequency domain. Next, the three major controls - frequency, span, and amplitude are described. Power in units of decibel (dB) is discussed along with the use of the spectrum analyzer in checking telemetry (TM) spectrums.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom and DVD, 1.25 hours.

Who Should Take This Training: T&E personnel.

CTE-AVM-140 Strain Gage Theory

Description: This training begins with a review of force, stress and strain. The basic concepts of a strain gage and how the Wheatstone bridge is utilized to obtain measurements are covered. The factors that can affect a strain gage’s output are discussed along with the methods of minimizing them. Finally, Aircraft Instrumentation Division (AID) Structures Laboratory capabilities are presented along with the requirements needed for testing.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom and DVD, 1.75 hours.

Who Should Take This Training: T&E personnel.

CTE-AVM-141 Telemetry System Design, Setup And Optimization

Description: This training covers the design of a telemetry system, which includes the transmitter, Radio Frequency (RF) cables, splitter and antennas. The importance of a link analysis and setting up a Pulse Code Modulation using Frequency Modulation (PCM/FM) transmitter for the proper frequency deviation is described. Finally, using a spectrum analyzer to verify the telemetry spectrum during a preflight is covered.

Program of Study: AVMI.

Vendor: CT&E.

Additional Course Information: Classroom and DVD, 2.25 hours.

Who Should Take This Training: T&E personnel.

CTE-AVM-142 Temperature Measurements I

Description: This training covers temperature measurements using a thermocouple. The voltage to temperature relationship is shown for the standard thermocouple types. Thermocouple junctions
are discussed along with reference junctions to convert over to copper wire. Response times of various thermocouple sizes are reviewed along with an example of a high-response thermocouple measurement.

Program of Study: AVMI.
Vendor: CT&E.
Additional Course Information: Classroom and DVD, 1.5 hours.
Who Should Take This Training: T&E personnel.

CTE-AVM-143 Temperature Measurements II

Description: This training discusses other temperature sensing devices such as the Resistive Temperature Device (RTD) and infrared sensors. The RTD conditioner card RTD-120 setup is shown using screenshots. Various infrared sensors are illustrated to show their operation.

Program of Study: AVMI.
Vendor: CT&E.
Additional Course Information: Classroom and DVD, 1.5 hours.
Who Should Take This Training: T&E personnel.

CTE-AVM-145 Uncertainty Analysis Using ISG's Uncertainty Analyzer 3.0

Description: This training is a guide in performing and uncertainty analysis by illustrating an example of an accelerometer measurement. The assumptions that need to be made when analyzing a measurement are discussed throughout the use of the software. Discussions include transfer function equations, error contributions, probability distributions, and how to interpret the results to improve the measurement. This training was presented as a tutorial at the 23rd Range Commanders Council (RCC) Transducer Workshop in Buffalo, NY in 2008.

Program of Study: AVMI.
Vendor: CT&E.
Additional Course Information: Classroom, 3 hours.
Who Should Take This Training: T&E personnel.

CTE-AVM-146 Understanding And Using A Time Domain Reflectometer (TDR)

Description: This training describes what a Time Domain Reflectometer (TDR) is and how it measures distances to different anomalies along a transmission line. The impedance of a transmission line is discussed and how the dielectric constant affects the speed of a signal traveling along the wire. Impedance miss matches are discussed and how waves are reflected when they reach this boundary. Finally, the TDS-8200 introduced and examples of measuring a coaxial cable and differential line are shown.
Program of Study: AVMI.
Vendor: CT&E.
Additional Course Information: Classroom and DVD, 1.5 hours.
Who Should Take This Training: T&E personnel.

CTE-LTI-210 A Comprehensive Introduction To Networking

Description: With the advent of instrumentation networks there exists a need within NAVAIR Aircraft Instrumentation to familiarize instrumentation personnel with data networks. Furthermore in order to effectively install and utilize these networks to the fullest benefits, Aircraft Instrumentation personnel need to have a good understanding of the fundamentals of data networks. This will enable NAVAIR instrumentation personnel to be better postured to support both instrumentation and production aircraft data networks in support of Naval Aviation Flight Testing. This course provides a solid foundation in networking concepts and practices. It also provides the student a working knowledge of IP addressing, TCP/IP operation, LAN solutions, Quality of Service (QoS) requirements, wireless network options, security elements, enterprise internet working, and modern hardware.

Program of Study: AVMI.
Vendor: Learning Tree.
Additional Course Information: Classroom, 4 days.
Who Should Take This Training: T&E personnel.

CTE-ALB-200 Air Launched Ballistics Overview

Description: This course provides an overview of the technical areas of the Air Launched Ballistics and Weapon Employment Data Branch. Upon completion of this course students should have a general knowledge of technical areas and the processes needed to complete AIR-5.1.6.9-specific knowledge, abilities, and skills (KASs). Topics include in-house software models, development processes, safe escape, and weapon basics.

Program of Study: Air Vehicle T&E.
Vendor: CT&E.
Additional Course Information: Classroom, 5 days.
Who Should Take This Training: SE and T&E personnel.

CTE-FLU-200 Introduction To Flutter

Description: This course provides a brief introduction of the aeroelastic phenomenon known as “flutter”, and an overview of the integrated approach used by major aircraft development programs to ensure that the aircraft are free of flutter. Topics include design requirements, analysis techniques, wind tunnels test methods, ground test methods, and flight test methods. This course is
designed for flight test engineers and managers who are interested in becoming familiar with this complex and challenging field.

Program of Study: Air Vehicle T&E.

Vendor: CT&E.

Additional Course Information: Classroom, 2 days.

Who Should Take This Training: T&E personnel.

**CTE-GIT-223 Advanced Concepts In Autonomous Unmanned Systems**

Description: The Advanced Concepts in Autonomous Unmanned Systems course will review the functional areas of autonomous systems and introduce available technologies with a discussion of maturity levels and challenges. Topics will include robot architectures, world modeling with respect to autonomy, perception to action in robotic and unmanned systems, multi-vehicle systems, autonomy mathematical theories and state based planning.

Program of Study: Air Vehicle T&E.

Vendor: Georgia Tech Professional Education.

Additional Course Information: Classroom, 2 days.

Who Should Take This Training: T&E personnel.

**CTE-KUA-210 Aircraft Structural Loads**

Description: The University of Kansas has designed a unique 5-day course proving an overview of aircraft structural external loads analysis, including: criteria, design, analysis, fatigue, certification, validation, and testing. The course covers FAR 23 and FAR 25 airplane loads requirements. These concepts will be applied to military requirements for fixed-wing criteria.

Program of Study: Air Vehicle T&E.

Vendor: The University of Kansas - Aerospace Short Courses.

Additional Course Information: Classroom, 5 days.

Who Should Take This Training: T&E personnel.

**CTE-KUA-211 Principles Of Aeroelasticity**

Description: The University of Kansas has designed a unique five-day course proving an in-depth understanding of aeroelastic behavior for aerospace systems. The course explores aeroelastic phenomena, structural dynamics and fluid-structure-control interaction; also examines practical issues such as ground and flight tests. The course includes solution methodologies, state-of-the-art computational methods for aeroelastic analysis, development of the operational boundary, aero-servoelasticity, and contemporary issues such as limit cycle oscillations and related non-linear pathologies in aeroelastic systems.
CTE-KUA-212 Helicopter Performance, Stability And Control

Description: What the working helicopter aerodynamicist needs to know to analyze an existing design or participate in the development of a new one. Covers aspects of hover, vertical flight and forward flight. Emphasis on relating helicopter aerodynamics to airplane aerodynamics for those who are making the transition.

Program of Study: Air Vehicle T&E.
Vendor: University of Kansas.
Additional Course Information: Classroom, 4 days.
Who Should Take This Training: T&E personnel.

CTE-KUA-213 Airplane Subsonic Wind Tunnel Testing And Aerodynamic Design

Description: This course deals with wind tunnel test specifics: how to set up a test, how to run tests, what is involved with testing from a test management and engineering point of view, how to design the test models, and what it is used for in the aerodynamic design of airplanes. The course deals with data analysis and how to correct it to full-scale airplanes.

Program of Study: Air Vehicle T&E.
Vendor: The University of Kansas - Aerospace Short Courses.
Additional Course Information: Classroom, 3 days.
Who Should Take This Training: T&E personnel.

CTE-KUA-214 Digital Flight Control Systems: Analysis And Design

Description: This course presents a set of classical and modern flight control analysis and design tools. These tools will be combined to form a design process that will enable the development of flight control systems that are implementable in “real world” vehicles. These techniques will be used to design typical aeronautical vehicles’ lateral and longitudinal controllers.

Program of Study: Air Vehicle T&E.
Vendor: The University of Kansas - Aerospace Short Courses.
Additional Course Information: Classroom, 4 days.
Who Should Take This Training: T&E personnel.
CTE-PSE-200 Piloted Simulated Evaluations

Description: Flight simulators are increasingly important in the process of aircrew training. Advances in computer technology, graphics, and actuators have made simulators increasingly realistic, and Navy leadership demands better aircrew training despite shrinking training budgets. But verifying the accuracy, realism, and mission suitability of these simulators is essential to ensuring quality training. This two-day course presents the fundamentals of evaluating piloted simulators and how testing and reporting differs from aircraft evaluation. Students will also learn how piloted simulators are constructed and how they operate, and learn about the simulator acquisition process and typical participants.

Program of Study: Air Vehicle T&E.

Vendor: CT&E.

Additional Course Information: Classroom, 2 days.

Who Should Take This Training: T&E personnel.

CTE-PRF-200 Introduction To Level Flight Performance Testing

Description: Students are introduced to the physics and theory that govern fixed-wing level flight aircraft performance. Equations are derived to expand understanding and highlight quantities that can be measured during performance flight testing. Level flight performance test techniques are briefly discussed.

Program of Study: Air Vehicle T&E.

Vendor: CT&E.

Additional Course Information: Classroom, 3 days.

Who Should Take This Training: T&E personnel.

CTE-SPE-210 Mass Properties Space Electronics

Description: The seminar covers the following subjects: definition of mass properties, Center of Gravity (CG), Moment of Inertia (MOI), Product of Inertia (POI), measurement techniques and theory, an introduction to the KSR6000 Mass Properties Instrument, CG measurement, MOI measurement, identifying coordinate systems, sources of measurement uncertainty, and fixtureing.

Program of Study: Air Vehicle T&E.

Vendor: Space Electronics.

Additional Course Information: Classroom, 2 days.

Who Should Take This Training: SE and T&E personnel.
CTE-TPS-RFQ Introduction To Rotary Wing Flying Qualities And Performance Test & Evaluation

No course description provided. Please contact Kerstin Howard, Administrator, College of Test and Evaluation (CT&E), NAVAIR for more information: 301-757-6788, kerstin.howard.ctr@navy.mil.

CTE-VIS-210 Strain Gage Technology Workshop

Description: In this comprehensive, hands-on workshop, participants make several complete strain gage installations, including electrical connections, checkout, and environmental protection; and use appropriate readout instrumentation to verify results of their own installations. A wide range of strain measuring instrumentation is described in detail, and guidelines for proper instrument selection and usage are thoroughly reviewed. Participants have an opportunity to examine and familiarize themselves with all instruments on display. In the instrumentation portion of the program, some electrical circuitry is discussed.

Program of Study: Air Vehicle T&E.

Vendor: Vishay Measurements Group, Inc.

Additional Course Information: Classroom, 3 days.

Who Should Take This Training: T&E personnel.

CTE-FTB-100 Flight Test Basics

Description: Students receive an introduction and familiarization to the basics of flight testing and the fundamentals necessary to perform effectively and safely in the Test and Evaluation (T&E) environment. Topics include aircraft familiarization, test preparation and execution, instrumentation, weather planning, Naval Air Training and Operating Procedures Standardization (NATOPS)/Pocket Check List (PCL), mission and weapons systems, carrier suitability, and air vehicle stores capability, to name a few. Course series culminates in a simulator event that blends traditional instruction with the experience of real world testing.

Program of Study: FTE Core.

Vendor: CT&E.

Additional Course Information: Classroom, 4 days.

Who Should Take This Training: T&E personnel.

CTE-ITE-100 Indoctrination To Test And Evaluation

Description: Students receive an introduction and familiarization to the NATEU, U.S. Navy, NAVAIR, and AIR-5.0 along with related subject areas that Flight Test Engineers (FTEs) are exposed to within the Test and Evaluation (T&E) environment. Topics include hangar and flight line safety, military ranks and insignias, Operational Risk Management (ORM), and test and evaluation concepts. Students develop a deeper understanding and appreciation for the T&E structure in which they will work.
Program of Study: FTE Core.

Vendor: CT&E.

Additional Course Information: Classroom, 2 days.

Who Should Take This Training: T&E personnel.

**CTE-INS-200 Instrumentation Systems**

Description: This course is intended for journeymen personnel and covers how the measurement requirements for flight test determine the design of an instrumentation system. A definition of Decision Quality Data and a brief overview of an instrumentation system are introduced before a detailed description of the AID Project Effort Estimate Request form is presented. The configuration of the instrumentation system is then covered, which includes gains, offsets, AC coupling, pre-sample filtering, sampling, recording and telemetry. Calibrations and uncertainty are discussed in terms of data quality. An example acceleration measurement is used to illustrate the design decisions that must be made from the measurement requirements. Other elements of instrumentation are discussed including the monitoring of avionics bus data, audio, time, and specialized sampling.

Program of Study: Air Vehicle T&E.

Vendor: CT&E.

Additional Course Information: Classroom, 1 day.

Who Should Take This Training: T&E personnel.

**CTE-TP-100 Test Planning**

Description: Students receive an introduction and familiarization to test planning, requirements, roles and responsibilities, content, review and approval, and test plan amendments. Students will review NAVAIR Instruction 3960.4 and Test Planning Handbook, associated references, test plan development processes, and the products required to plan and document effective and safe tests. The core material includes classroom instruction, case studies, and test plan writing exercises. Students develop the conceptual tools required to produce a formal test plan.

Program of Study: FTE Core.

Vendor: CT&E.

Additional Course Information: Classroom, 3 days.

Who Should Take This Training: T&E personnel.

**CTE-TP-200 Test Planning For Test And Evaluation (T&E) Managers**

Description: This class examines the roles and responsibilities of senior level manager’s in test planning and allows participants to review the same techniques and processes that are presented to junior level Flight Test Engineers (FTEs) in TP-100. This class presents a synopsis of material
instructed in TP-100 and provides branch head level training on test plan requirements, content, review process, as well as an opportunity for branch heads to interact with squadron Chief Test Engineers.

Program of Study: FTE Core.

Vendor: CT&E.

Additional Course Information: Classroom, 1 day.

Who Should Take This Training: T&E personnel.

**CTE-TR-100 Test Reporting**

Description: Students receive an introduction and familiarization to test reporting philosophy, critical thinking, daily reports, deficiency reports, report of test results, and other test reports. Students will review NAVAI Test Reporting Instruction 3905.1, Test Reporting Handbook, associated references, processes, and products required to collect, analyze, and effectively report on the results of a test. Both informal and formal test reports are covered. The core material includes classroom instruction and report writing exercises. Students develop the conceptual tools required to produce a test report.

Program of Study: FTE Core.

Vendor: CT&E.

Additional Course Information: Classroom, 2.5 days.

Who Should Take This Training: T&E personnel.

**CTE-TR-200 Test Reporting For T&E Managers**

Description: This class examines the roles and responsibilities of senior level managers in test reporting that focuses on the philosophy, daily flight reports, deficiency reports, report of test results, critical thinking, methods, techniques, and tools for reporting of test results. This is a process-level class, designed to provide managers and senior level personnel with a current understanding and guidance on test reporting. This class also acts as a refresher for managers and senior personnel to review the test reporting process as well as the review of test documents.

Program of Study: FTE Core.

Vendor: CT&E.

Additional Course Information: Classroom, 2 days.

Who Should Take This Training: T&E personnel.

**CTE-TRW-100 Test Report Writing Workshop**

*No course description provided. Please contact Kerstin Howard, Administrator, College of Test and Evaluation (CT&E), NAVAI for more information: 301-757-6788, kerstin.howard.ctr@navy.mil.*
CTE-XEA-100 Introduction To Flight Test For Enlisted Aircrew

Description: This course introduces enlisted aircrew to the NAVAIR organization, the purpose of flight test, and technical training necessary to be a useful and active participant in flight test programs. Topics include test planning, crew station analysis, test cards, and deficiency reports.

Program of Study: FTE Core.

Vendor: CT&E.

Additional Course Information: Classroom, 2 days.

Who Should Take This Training: T&E personnel, VX20 and HX21.

CTE-TP-300 Test Planning For Integrated Test Teams (ITTs)

Description: Members of an Integrated Test Team (ITT) jointly receive familiarization to the test planning process and flight test discipline from the NAVAIR perspective, and openly discuss how it directly relates to their ITTs structure and concept of operations. Students will review NAVAIR Instruction 3960.4 and the Test Planning Handbook, while also reviewing and discussing ITT specific relationships as defined in ITT Charters, Concept of Operations, and other program specific Test and Evaluation (T&E) documentation. It allows participants to review the same flight test planning techniques and processes that are presented to all NAVAIR FTEs in TP-100/TP-200 interlaced with ITT specific discussions, as well as an opportunity for ITT members to interact with NAVAIR Chief Test Engineers. The core material includes classroom instruction and ITT specific implementation discussions.

Program of Study: ITT Specific.

Vendor: CT&E.

Additional Course Information: Classroom, length varies.

Who Should Take This Training: Integrated Test Teams

CTE-TR-300 Test Reporting For Integrated Test Teams (ITTs)

Description: Members of an Integrated Test Team (ITT) jointly receive a familiarization to the NAVAIR flight test reporting philosophy, as well as an introduction to the NAVAIR specific report types (e.g., daily flight reports, deficiency reports, report of test results, etc.). Students will review NAVAIR Instruction 3905.1 and the Test Reporting Handbook, while also reviewing and discussing ITT specific reporting requirements defined in ITT Charters, Concept of Operations, and other program specific Test and Evaluation (T&E) documentation. It allows participants to review the same flight test reporting techniques and processes that are presented to all NAVAIR Flight Test Engineers (FTEs) in TR-100/TR-200 interlaced with ITT specific discussions, as well as an opportunity for ITT members to interact with NAVAIR Chief Test Engineers. The core material includes classroom instruction, report writing exercises, and ITT specific implementation discussions. Students develop the conceptual tools required to produce a NAVAIR test report.

Program of Study: ITT Specific.
Vendor: CT&E.

Additional Course Information: Classroom, length varies.

Who Should Take This Training: Integrated Test Teams.

**CTE-AIA-210 Radar**

Description: This class explores radar principles and applications, including a review of the required background material, an introduction to basic radar theory and techniques, and a discussion of several radar systems and applications. The course is self-contained in that all of the background material is included.

Program of Study: Mission Systems T&E.

Vendor: The American Institute of Aeronautics and Astronautics (AIAA).

Additional Course Information: Classroom, 3 days.

Who Should Take This Training: T&E personnel.

**CTE-ASW-200 Introduction To Air Anti-Submarine Warfare**

Description: This course provides students with a basic understanding of the physics of underwater sound, as well as an introduction to ASW systems test and evaluation, including the use of test ranges in order to successfully complete ASW/acoustic mission system test planning and execution. The target audience for this course is newly-hired Acoustic Flight Test Engineers, APMT&E and LTEs of programs with acoustics, ESDPs and summer-hires involved with acoustic testing.

Program of Study: Mission Systems T&E.

Vendor: CT&E.

Additional Course Information: Classroom, 3 days.

Who Should Take This Training: T&E personnel.

**CTE-ATI-210 Fundamentals Of Link 16 /Joint Tactical Information Distribution System (JTIDS) / Midshipmen Information System (MIDS)**

Description: The Fundamentals of Link 16, Joint Tactical Information Distribution System (JTIDS), and Midshipmen Information System (MIDS) is a comprehensive course designed to give the student a thorough understanding of every aspect of Link 16, both technical and tactical. Designed to support both military and industry, the course does not require any previous experience or exposure to the subject matter. The course comes with one-year follow-on support, which entitles the student to contact the instructor with course-related questions for one year after course completion.

Program of Study: Mission Systems T&E.

CTE-ATI-211 Link 16 Advanced Applied Technology

Description: This course teaches 26 instructional modules that are necessary to develop a thorough understanding of Link 16. It expands upon many of the topics covered in ATI-210, Fundamentals of Link 16, including technical details of Link 16 messages, their handling, and network structure.

Program of Study: Mission Systems T&E.


CTE-CNS-101 Communication Navigation Surveillance/Air Traffic Management (CNS/ATM)

Description: CNS-101 Parts 1, 2, and 3 cover airspace architecture and requirements for communication, navigation and surveillance improvements that are taking place worldwide with the purpose of increasing capacity and safety. Each presentation gives a background orientation and then describes the Communication Navigation Surveillance (CNS) functionalities. Common Integration of Data Link Capabilities introduces issues regarding use of data links in various applications. The course describes the possible incompatibility of a common data link between some platforms and describes recommended solutions for interoperability.

Program of Study: Mission Systems T&E.

Vendor: DCS Corp.

CTE-CNS-201 Communication Navigation Surveillance (CNS)/Air Traffic Management (ATM)

Description: Both CNS 201 sections provide in depth instruction in navigation and surveillance with guidance on integration. These sections are geared toward the integrator and system designer. The classes will go into detail on the navigation and surveillance functionalities of CNS/ATM. Each part will address frequently asked questions dealing with integrating these functionalities into aircraft. RTOS for CNS-201 covers integration of Real Time Operating Systems for use in Navigation Systems and other applications. It is a general discussion of what RTOS are and how they function, and recommendations on integration. The presentation will discuss open systems architectures for avionics integrations. The concept and status of the NAVAir PMA209 Future Avionics Capabilities Environment (FACE) program will be presented as well.

Program of Study: Mission Systems T&E.

Vendor: DCS Corp.
CTE-EDA-211 PADS Layout Training EDA Direct

Description: Students learn the workflow of designing a printed circuit board using the Mentor Graphics PADS software. Course highlights include importing netlists, placing parts, routing connections, and verifying designs. Students will learn how to interface with other Mentor products including DxDesigner and the Pads Router. Hands-on experience with both interactive and automatic batch routing is included.

Program of Study: Mission Systems T&E.

Vendor: EDA Direct.

Additional Course Information: Classroom, 1 day.

Who Should Take This Training: T&E personnel.

CTE-EDS-200 Fundamentals Of Electronic Defense Systems

Description: Fundamentals of Electronic Defense Systems introduces students to concepts in aviation anti-submarine warfare (AASW), electronic warfare (EW), and electro-optic systems (EOS). AASW topics include the physics of underwater sound and their application to anti-submarine tactics. EW topics include a brief history of EW, Radio Frequency (RF) propagation theory, radar system design architecture and characteristics of operation, EW operational missions, battlefield communications networks / systems and characteristics of operation, and future EW challenges. EOS topics include descriptions and use of infrared (IR), forward looking infrared (FLIR), and infrared search and track (IRST) systems.

Program of Study: Mission Systems T&E.

Vendor: CT&E.

Additional Course Information: Classroom, 3 days.

Who Should Take This Training: T&E personnel.

CTE-EOS-200 Introduction To Electro-Optic Systems

Description: This course introduces students to electro-optic systems including infrared (IR), Forward Looking Infrared (FLIR), and Infrared Search and Track (IRST) Systems. Topics include current system descriptions and why they are used. Course materials include test equipment, types of tests performed, and sample data for critical analysis.

Program of Study: Mission Systems T&E.

Vendor: CT&E.

Additional Course Information: Classroom, 2 days.
CTE-EWB-200 Electronic Warfare Basics

Description: Electronic Warfare (EW) Basics is designed for flight test engineers, test managers, civilian, and military new to electronic warfare. The course familiarizes students with EW concepts. Topics include a brief history of EW, Radio Frequency (RF) propagation theory, radar system design architecture and characteristics of operation, EW operational missions, battlefield communications networks/systems and characteristics of operation, and future EW challenges.

Program of Study: Mission Systems T&E.

Vendor: CT&E.

Additional Course Information: Classroom, 2 days.

Who Should Take This Training: T&E personnel.

CTE-EWT-200 Electronic Warfare Test Techniques

Description: Electronic Warfare Test and Evaluation is designed for flight test engineers, test managers, civilian, and military involved in electronic warfare test and evaluation. The course covers aspects of EW test and evaluation common between EW missions. Topics include EW specific threat library or intelligence data file structures and impact on EW system performance; EW specific intelligence data resources (e.g. Common Emitter Database (CED), Electronic Warfare Integrated Reprogrammable (EWIR) Database); and EW test simulation, EW test range, and EW test instrumentation requirements, capabilities, and limitations. EW Test and Evaluation requires a SECRET clearance.

Program of Study: Mission Systems T&E.

Vendor: CT&E.

Additional Course Information: Classroom, 2 days.

Who Should Take This Training: T&E personnel.

CTE-GIT-211 Multi-Sensor Data Fusion

Description: Accurate and efficient management of information on the battlefield is vital for successful military operations. Integrating and interpreting data is an emerging technology, commonly referred to as data fusion. The power to exploit all relevant information rapidly and effectively is at the core of the Net-Centric Operations (NCO) paradigm. To further advance the knowledge and work on data fusion, the military will need to identify concerns in technological advancement, analyze current and future requirements, as well as overcome the major challenges faced, and how these challenges can be resolved.

Program of Study: Mission Systems T&E.

Vendor: Georgia Tech Research Institute (GTRI, Orlando).
CTE-GIT-212 Principles Of Modern Radar

Description: Students will learn radar principles, systems, techniques, phenomenology, and the basics of radar technology. Students will also receive up-to-date examples of modern radar systems, including microwave and millimeter-wave, and their applications. By the end of this course, students will understand antennas, transmitters, receivers, clutter and noise, detection, signal processing, waveform design, Doppler techniques, resolution, multipath, and reflectivity measurements.

Program of Study: Mission Systems T&E.

Vendor: Georgia Tech.

Who Should Take This Training: T&E personnel.

CTE-GIT-213 Phased Array Radar Systems

Description: This course provides an overview of phased array radar system requirements and operation, which is reinforced by application examples. Students will examine major subsystems and associated technologies with specialists in those areas. This class will focus on phased array antenna principles and design, as well as on software algorithms for search and track. System implementation trends and recent technological developments are summarized. Students will be provided demonstrations of antenna modeling software and hardware.

Program of Study: Mission Systems T&E.

Vendor: Georgia Tech.

Who Should Take This Training: T&E personnel.

CTE-GIT-214 Fundamentals Of Radar Signal Processing

Description: This course introduces the student to the foundational signal processing methods at the core of most modern radar systems and provides a solid base for exploring advanced techniques such as radar imaging and adaptive processing. Review basic signal analysis concepts, focusing on Fourier transform relations and sampling. Explore common models of amplitude, Doppler, and statistical characteristics of targets and interference. Master methods for improving signal-to-interference ratio, including waveform modulation and pulse compression, Doppler processing, and adaptive interference rejection methods are discussed. Form output products of the signal processor with discussions of threshold detection, single- and multi-target tracking, and radar imaging.

Program of Study: Mission Systems T&E.
Vendor: Georgia Tech.

Additional Course Information: Classroom, 5 days.

Who Should Take This Training: T&E personnel.

CTE-GIT-215 Fundamentals Of Cyber T&E

Description: Students will receive an overview of the Cyber domain and how test and evaluation is used for Cyber systems. The course includes the perspectives of the Department of Defense and industry test and evaluation practitioners, covering roles, responsibilities, processes, procedures, and tools to work effectively in this space. Students will gain an understanding of modeling, simulation, and stimulation tools used to test wired and wireless networks. Course covers Developmental, Operational, and Interoperability test and evaluation as it applies to Cyber systems. Students will receive an introduction to Cyber warfare, concepts, relevant systems (defensive and offensive), and testing considerations for wireless and wired networked systems.

Program of Study: Mission Systems T&E.

Vendor: Georgia Tech.

Additional Course Information: Classroom, 3 days.

Who Should Take This Training: T&E personnel.

CTE-GIT-216 Radar Systems Software Engineering

Description: The course will give students an understanding on how to trade the usage of implementing new code, reuse of existing radar software and/or available COTS products for performance, cost and schedule requirements. Students will learn implementation and process requirements for the development of all radar software functions and productions required for an operational system. Students will acquire a good understanding of hard real-time execution (Digital Beam-former, Digital Receiver Exciters and Signal Processors) to soft real-time processing (Tracking, Planning and Scheduling, Radar Control, Displays and Communications) software products.

Program of Study: Mission Systems T&E.

Vendor: Georgia Tech Research Institute (GTRI, Atlanta).

Additional Course Information: Classroom, 3 days.

Who Should Take This Training: T&E personnel.

CTE-GIT-217 Test And Evaluation Of Defense RF Electronic Systems

Description: In this course, students will be provided an overview of the requirements for testing defense related RF electronics systems (radar, EW, communications, and RF surveillance systems.) The course will begin with a detailed discussion of test and evaluation as it pertains to Department of Defense and U.S. Government systems acquisition processes, covering policy, T&E processes, test planning, and test procedures. Students will explore in detail laboratory and in-situ testing methods for components, subassemblies, subsystems, systems and platform (ship, air, space, and ground)-
level testing. Labs sessions will give students hands-on experience with advanced test equipment and testing of transmitters, receivers, and antennas. Students will also explore modeling simulation in test and evaluation and special test considerations for EMC/EMI electronic combat, and command and control testing.

Program of Study: Mission Systems T&E.

Vendor: Georgia Tech Research Institute (GTRI, Orlando).

Additional Course Information: Classroom, 4 days.

Who Should Take This Training: T&E personnel.

CTE-GIT-218 Principles Of Pulse Doppler Radar

Description: This course provides a fundamental understanding of pulse-Doppler Radar and how it is used to detect moving targets in the presence of background clutter. After a brief refresher of basic radar principles, the course describes the Doppler shift, how Doppler frequency is measured by coherent radar, and the range and Doppler extents of the interfering clutter from the perspective of airborne radar. The concepts of ambiguities and blind zones and their implications toward clutter folding; probability of detection, search time, and the need for pulse-repetition frequency (PRF) variation will be covered. Students will learn about the three major PRF regimes-high PRF, medium PRF, and low PRF-with particular emphasis on medium PRF issues, such as blind zones, ambiguity resolution and PRF selection. Fundamental signal processing theory is provided for moving target indication (MTI) and Doppler processing. Related airborne radar modes such as ground moving target indicator (GMTI) and synthetic aperture radar (SAR) are described to show similarities and differences with pulse-Doppler. The course also describes detection functions and issues in the context of pulse-Doppler waveforms, as well as implications of hardware errors, surface radar implementations, and operation in electronic warfare environments. Exercises are provided to help reinforce some of the basic concepts presented in the lectures.

Program of Study: Mission Systems T&E.

Vendor: Georgia Tech Research Institute (GTRI, Atlanta).

Additional Course Information: Classroom, 5 days.

Who Should Take This Training: T&E personnel.

CTE-GTI-222 Airborne AESA Radar

Description: Active Electronically Scanned Arrays (AESAs) are becoming commonplace in airborne radar systems and present a new set of opportunities and challenges to the system engineer. This course will provide an overview of airborne AESA radar systems focusing on AESA theory, technology and practical considerations. The course will also discuss airborne radar operations (AMTI, GMTI, STAP, SAR EA/EP) with an emphasis on modes and capabilities enhanced by AESAs. This course will also discuss emerging trends and recent technology developments that will impact future systems.

Program of Study: Mission Systems T&E.
CTE-LTI-210 A Comprehensive Introduction To Networking

Description: With the advent of instrumentation networks there exists a need within NAVAIR Aircraft Instrumentation to familiarize instrumentation personnel with data networks. Furthermore in order to effectively install and utilize these networks to the fullest benefits, Aircraft Instrumentation personnel need to have a good understanding of the fundamentals of data networks. This will enable NAVAIR instrumentation personnel to be better postured to support both instrumentation and production aircraft data networks in support of Naval Aviation Flight Testing. This course provides a solid foundation in networking concepts and practices. It also provides the student a working knowledge of IP addressing, TCP/IP operation, LAN solutions, Quality of Service (QoS) requirements, wireless network options, security elements, enterprise internet working, and modern hardware.

Program of Study: Mission Systems T&E.

Vendor: Learning Tree.

Additional Course Information: Classroom, 4 days.

Who Should Take This Training: T&E personnel.

CTE-LTI-211 Network Configuration And Troubleshooting

Description: The ability to provide users with constant access to critical data is essential for the success of today’s rapidly evolving networks. In this course, you learn to configure and maintain networks, and identify and resolve problems related to cables, wireless connections, protocols and applications using a comprehensive set of tools and techniques.

Program of Study: Mission Systems T&E.

Vendor: Learning Tree.

Additional Course Information: Classroom, 4 days.

Who Should Take This Training: T&E personnel.

CTE-MSF-100 Mission Systems Fundamentals

Description: This course provides an overview of key knowledge areas for the Mission Systems T&E personnel workforce. Topics include: overview of mission systems and avionics test; Naval aviation mission areas (both primary and secondary); cockpit design and evaluation; warning, caution, and advisory systems; mission system hardware, software, and data bus architecture; and communication/data link use and test. MSF-100 is designed to promote discussion and understanding of the
roles and responsibilities of platform and functional branches in AIR-5.1.2, along with selected AIR-5.4 branches that support mission systems T&E.

Program of Study: Mission Systems T&E.

Vendor: CT&E.

Additional Course Information: Classroom, 1 day.

Who Should Take This Training: T&E personnel.

**CTE-MTG-210 Automatic Identification System (AIS) 1**

Description: This one-day seminar is designed to provide pilots with knowledge of the technologies that make up the Automatic Identification System (AIS), and to expose them to the advantages/problems associated with this equipment. The AIS portion of the course has been developed using both government and manufacturer technical data. A minimum of two hours is spent managing AIS target information in both simulated and live AIS environments.

Program of Study: Mission Systems T&E.

Vendor: Maritime Institute of Technology and Graduate Studies (MITAGS).

Additional Course Information: Classroom, 1 day.

Who Should Take This Training: T&E personnel.

**CTE-NAV-200 Introduction To Navigation Systems Test And Evaluation**

Description: This five-day class provides an overview of topics pertinent to test and evaluation of navigation avionics in naval aircraft. Topics include: time and distance measurement, geodesy, geomagnetics, gyroscopics, and various self-contained and externally referenced sensors/systems that comprise an aircraft navigation suite (Global Positioning System (GPS), inertial navigation units, ground-based radio-navigation aids, etc.). The class also touches on test philosophy, available test tools, and data analysis techniques while characterizing attributes pertinent to navigation avionics.

Program of Study: Mission Systems T&E.

Vendor: CT&E.

Additional Course Information: Classroom, 5 days.

Who Should Take This Training: T&E personnel.

**CTE-NTG-210 Radio Frequency Interference (RFI) And Jamming Issues For NAVAIR**

Description: Radio Frequency Interference (RFI) and jamming issues for NAVAIR includes instruction on jamming and spoofing threats and unintentional RF interference. An overview of anti-jam design techniques is explored along with an analysis of RFI effects and Global Positioning System (GPS) interference in aviation. Case studies of terrorist and military scenarios apply knowledge to real-
world environments. Course material covers land mobile and maritime systems and GPS receiver vulnerabilities and mitigation approaches.

Program of Study: Mission Systems T&E.

Vendor: NavTechGPS.

Additional Course Information: Classroom, 2 days.

Who Should Take This Training: T&E personnel.

**CTE-NTG-211 GPS High Precision Kinematic Carrier Phase Techniques With LAAS**

Description: High accuracy Global Positioning System (GPS) positioning provides users accuracies down to the CM level very effectively. Day one describes the basic concepts involved, and the various receiver technologies and observables available to obtain high accuracy positions. Day two addresses the various errors affecting GPS, and how to estimate many of them using simple field experiments. It also presents some fundamental aspects of estimation theory; and describes the various Differential Global Positioning System (DGPS) methods and approaches, with real-time implementation implications. Day three focuses on using GPS in a variety of applications environments with high precision requirements. Numerous case studies are presented to illustrate the principals involved.

Program of Study: Mission Systems T&E.

Vendor: NavTechGPS.

Additional Course Information: Classroom, 3 days.

Who Should Take This Training: T&E personnel.

**CTE-NTG-212 GPS Operation For Engineers And Technical Professionals**

Description: Positioning System (GPS), an overview of differential GPS (DGPS) technology, systems concepts, design, operation, an introduction to Kalman filtering, and implementation and applications. This course covers the following objectives: a comprehensive introduction to GPS, system concepts, an introduction to DGPS, design, operation, implementation and applications; a detailed information on the GPS signal, its processing by the receiver, and the techniques by which GPS obtains position, velocity and time; to present current information on the status, plans, schedule and capabilities of GPS, as well as of other satellite-based systems with position velocity and time determination applications; information to fill in technical information gaps for those working in the GPS and GNSS fields.

Program of Study: Mission Systems T&E.

Vendor: NavTechGPS.

Additional Course Information: Classroom, 3 days.

Who Should Take This Training: T&E personnel.
CTE-TPS-SYS Introduction To Aircraft And Systems Test & Evaluation

No course description provided. Please contact Kerstin Howard, Administrator, College of Test and Evaluation (CT&E), NAVAIR for more information: 301-757-6788, kerstin.howard.ctr@navy.mil.

CTE-TPS-UAS Introduction To Unmanned Aerial Systems (UAS)

No course description provided. Please contact Kerstin Howard, Administrator, College of Test and Evaluation (CT&E), NAVAIR for more information: 301-757-6788, kerstin.howard.ctr@navy.mil.

CTE-TSI-210 MIL-STD-1553

Description: MIL-STD-1553, the military standard that defines the mechanical, electrical, and functional characteristics of a serial data bus is explored. Topics include an introduction, evolution, and history of the applications used. Students learn definitions, encoding formats, and ways to decode words and identify message formats. Hardware and software characteristics design are covered along with the philosophy and phases of testing. Operating methods discussed are Bus Controller, Remote Terminal, and Bus Monitor operation. An overview of test equipment includes: functional requirements, common interface requirements, remote terminal tester, bus controller tester, bus monitor, bus activity simulator, and an overview of available test equipment. Lab time enables students to practice trouble-shooting remote terminal problems.

Program of Study: Mission Systems T&E.

Vendor: Test Systems Inc.

Additional Course Information: Classroom, 3 days.

Who Should Take This Training: T&E personnel.

CTE-TSI-212 MIL-STD-1760

Description: This class provides an overview of MIL-STD-1760, which defines the standardized electrical interface between a military aircraft and its carriage stores. By the end of this course, students will be able to: demonstrate an understanding of the purpose of the standard and why it came to be; differentiate between the elements of stores integration that are covered by 1760 and those that are not; recognize the three elements of the standard (Physical, Electrical, and Logical) and what each is focused on; explain the restrictions 1760 places on the 1553 standard; explain the message set, message composition, and data flow of messages between the aircraft and the store; recognize the different control methodologies used in real-world applications.

Program of Study: Mission Systems T&E.

Vendor: Test Systems Inc.

Additional Course Information: Classroom, 1.5 days.

Who Should Take This Training: T&E personnel.
CTE-WLE-210 COMPTIA SEC+ 301

Description: This course covers six major topics: System Security; Network Infrastructure; Access Control; Assessments and Audits; Cryptography; and Organizational Security. This course consists of four days of lecture, followed by a fifth day for additional study and certification exam. Comp TIA Security+ Certification is a requirement to have administrative rights to the Joint Mission Planning System (JMPS) used by the E-2D and other platforms. This course is designed to prepare students for the certification exam.

Program of Study: Mission Systems T&E.

Vendor: Wyle Information Assurance Academy.

Additional Course Information: Classroom, 5 days.

Who Should Take This Training: T&E personnel.

CTE-WLE-211 Windows 7 Configuring

Description: This course provides students with the knowledge necessary to install, deploy, and upgrade to the Windows® 7 operating system. The student will acquire the skills to configure pre-installation and post installation system settings, maintain and monitor these systems, as well as, resolve and troubleshoot performance and reliability issues in the Windows® 7 environment. Windows® 7 Certification is a requirement to have administrative rights to the Joint Mission Planning System (JMPS) used by the E-2D and other platforms. This course is designed to prepare students for the certification exam.

Program of Study: Mission Systems T&E.

Vendor: Wyle Information Assurance Academy.

Additional Course Information: Classroom, 5 days.

Who Should Take This Training: T&E personnel.

CTE-WTG-210 Radio Frequency And Microwave Power Measurements

Description: Students in this course will study the principles of radio frequency (RF) and microwave power measurements, signal sources, mixers and modulation techniques, and the use of signal types in test applications. Students will learn amplitude and angle modulation, vector and scalar network measurements, and spectrum analyzer measurements through extensive hand-on interaction.

Program of Study: Mission Systems T&E.

Vendor: Wireless Telecom Group.

Additional Course Information: Classroom, 1 day.

Who Should Take This Training: T&E personnel.
CTE-CLR-200 China Lake Ranges 101

Description: Students receive an introduction of how the China Lake Ranges support customers’ test requirements. The course is structured in line with the three major activities the Range undertakes to support tests. TEST PLANNING covers how the Range works with customers to identify their test requirements and then apply Range capabilities and resources to develop an event plan. TEST CONDUCT covers the procedures the Range uses to conduct testing of air launched weapons, captive carry/electronic warfare (EW), and ground/track tests. POST TEST covers the activities the Range performs to close out a test.

Program of Study: Range T&E Capabilities.

Vendor: CT&E.

Additional Course Information: Classroom, 2 days.

Who Should Take This Training: T&E personnel.

CTE-CSM-216 Intro To SQL/MYSQL

Description: Students will learn the key concepts of Structured Query Language (SQL) and gain a solid working knowledge of this powerful and universal database programming language. This class will cover the basic structure of relational databases, how to read and write simple and complex SQL statements, and advanced data manipulation techniques. Some information on database administration will be provided. Upon completion of the course, the student should be able to: use the ORDER BY clause; perform wildcard-character filtering; use the GROUP BY and HAVING clauses; create and implement subqueries; use table joins; create constraints and indexes; and implement stored procedures, triggers, and cursor.

Program of Study: Range T&E Capabilities.

Vendor: College of Southern Maryland.

Additional Course Information: Classroom, 4 days.

Who Should Take This Training: T&E personnel.

CTE-CSM-217 C++ Programming For C

Description: This hands-on C++ training course presents a thorough introduction to object-oriented programming in C++ for experienced C programmers. The central concepts of C++ syntax and style are taught in the context of using object-oriented methods to achieve reusability, adaptability and reliability. Emphasis is placed on the features of C++ that support abstract data types, inheritance, and polymorphism. Students will learn to apply the process of data abstraction and class design. Extensive programming examples and exercises are provided, with approximately half of class time spent performing hands on programming labs. Practical aspects of C++ programming including efficiency, performance, testing, and reliability considerations are stressed throughout.

Program of Study: Range T&E Capabilities.
Vendor: College of Southern Maryland.

Additional Course Information: Classroom, 4 days.

Who Should Take This Training: T&E personnel.

**CTE-CSM-218 MYSQL For Database Administrators**

Description: The MySQL for Database Administrators course is for MySQL database administrators and other professionals who want to install and optimize MySQL Server, set up replications and security, perform database backups and performance tuning, and protect MySQL databases. This course will teach students how to install and configure the MySQL server, secure users and data, understand the use of the InnoDB storage engine with MySQL, configure privileges and access controls, work with stored procedures and triggers, plan for disaster recovery, and configure the server for performance and high availability.

Program of Study: Range T&E Capabilities.

Vendor: College of Southern Maryland.

Additional Course Information: Classroom, 5 days.

Who Should Take This Training: T&E personnel.

**CTE-GBK-210 Troubleshooting TCP/IP Networks With Wireshark**

*No course description provided. Please contact Kerstin Howard, Administrator, College of Test and Evaluation (CT&E), NAVAIR for more information: 301-757-6788, kerstin.howard.ctr@navy.mil.*

**CTE-GIT-219 Precision Stabilized Pointing And Tracking Systems**

Description: Radar and how it is used to detect moving targets in the presence of background clutter. After a brief refresher of basic radar principles, the course describes the Doppler shift, how Doppler frequency is measured by coherent radar, and the range and Doppler extents of the interfering clutter from the perspective of airborne radar. The concepts of ambiguities and blind zones and their implications toward clutter folding; probability of detection, search time, and the need for pulse-repetition frequency (PRF) variation will be covered. Students will learn about the three major PRF regimes-high PRF, medium PRF, and low PRF-with particular emphasis on medium PRF issues, such as blind zones, ambiguity resolution and PRF selection. Fundamental signal processing theory is provided for moving target indication (MTI) and Doppler processing. Related airborne radar modes such as ground moving target indicator (GMTI) and synthetic aperture radar (SAR) are described to show similarities and differences with pulse-Doppler. The course also describes detection functions and issues in the context of pulse-Doppler waveforms, as well as implications of hardware errors, surface radar implementations, and operation in electronic warfare environments. Exercises are provided to help reinforce some of the basic concepts presented in the lectures.

Program of Study: Range T&E Capabilities.

Vendor: Georgia Tech Professional Education.
CTE-GIT-220 Basic RF Electronic Warfare Concepts

Description: This course is designed for engineers and managers who desire an understanding of the basic concepts of RF Electronic Warfare. The course is unclassified and focuses on the underlying principles of EW, rather than on specific threats or EW systems. There are no prerequisites for this course. However, students with some technical background or training will receive the most benefit. The basic concepts presented include a medium-level-of detail overview of several types of weapon systems operating in today’s environment; first principles instruction in electromagnetic waves and radar cross section; and fundamental principles of operation for search and tracking radar systems, electronic countermeasures (ECM) systems, and electronic support measures (ESM) systems. Both qualitative and quantitative treatments are given, with appropriate examples, to make the course useful to students after they leave the classroom. Beyond the fundamentals, students are also exposed to contemporary topics such as DRFM, network-centric implications for EW, and data links.

Program of Study: Range T&E Capabilities.

Vendor: Georgia Tech Professional Education.

Additional Course Information: Classroom, 3 days.

Who Should Take This Training: T&E personnel.

CTE-IGX-210 IGRAFX Process For Six Sigma

Description: The iGrafx Process for Six Sigma workshop is designed for those who need to use the process modeling and simulation features of iGrafx Process for Six Sigma. The course will cover creating a process diagram, advanced process diagramming, data entry, hierarchy, document management overview, as well as tabular view and export/import. Students will also learn the mechanisms for sharing their work with others, the many different diagram types of iGrafx, and an overview of simulation.

Program of Study: Range T&E Capabilities.

Vendor: iGrafx LLC.

Additional Course Information: Classroom, 2.5 days.

Who Should Take This Training: T&E personnel.

CTE-ISC-210 Certified Secure Software Lifecycle Professional (CSSLP)

Description: This training seminar provides a comprehensive review of application security concepts and industry best practices, covering the 8 domains of the CSSLP Common Body of Knowledge: Secure Software Concepts; Security Software Requirements; Secure Software Design; Secure Software Implementation/Coding; Secure Software Testing; Software Acceptance; Software Deployment, Operations, Maintenance and Disposal; and Supply Chain and Software Acquisition.
Program of Study: Range T&E Capabilities.
Vendor: (ISC)2 International Information Systems Security Certification Consortium.
Additional Course Information: Classroom, 5 days.
Who Should Take This Training: T&E personnel.

**CTE-LTI-215 Software Testing And Quality Assurance**

Description: The proper testing of software can save an organization time, effort and money. In this course, software professionals and managers gain thorough knowledge of testing approaches that can be integrated into the software life cycle. Through hands-on exercises, students learn how to build testing methods into their work process to correctly design products that are functional and maintainable. In this course, students apply software testing methods throughout the development life cycle, ensuring software functions properly and is more easily maintainable-thereby saving their organization time, effort and money. Specifically, students will learn how to apply general software testing principles and fundamental test processes; implement test levels and types to various software development models; conduct static techniques using proper roles, responsibilities and tools; perform specification- and structure-based test design techniques; manage tests including planning, estimating, monitoring and controlling.

Program of Study: Range T&E Capabilities.
Vendor: Learning Tree.
Additional Course Information: Classroom, 4 days.
Who Should Take This Training: T&E personnel.

**CTE-CMT-100 Change Management For T&E**

Description: This course provides an introduction and familiarization with the NAVAIR Configuration Management (CM) process, to enable NAWC personnel to successfully request, obtain approval for, and document an aircraft configuration change for non-standard modifications on NAVAIRSYS/COM Aircraft Controlling Custodian (ACC) aircraft systems.

Program of Study: T&E Tools.
Vendor: CT&E.
Additional Course Information: Classroom, 1 hour.
Who Should Take This Training: T&E personnel.

**CTE-DOT-200 The DT/OT Transition Report**

Description: The Developmental Test to Operational Test (DT/OT) Transition Report provides timely decision-making information to the Program Manager for assessing the current readiness of the system under development to proceed into an operational test period. Upon completion of this course, students will be able to: describe DT/OT and identify its desired outcome; explain guidance
on DT to OT transition; describe the required elements of the DT/OT Transition Report; and describe the optional elements of the DT/OT Transition Report.

Program of Study: T&E Tools.

Vendor: CT&E.

Additional Course Information: Classroom, 4 hours.

Who Should Take This Training: T&E personnel.

**CTE-HWI-210 Effective Writing For Engineers**

Description: This course will discuss various planning strategies, practical approaches students can use immediately for greater impact in their documents, and techniques that will help make the writing process smoother and less cumbersome. At the end of this course, students should be able to: create strategies to write more effectively; develop useful pre-writing strategies; understand how to use language more effectively; discuss the role of organization in facilitating reading; determine how to use logic in documents; write documents more effectively and efficiently; and write to-the-point, precise documents.

Program of Study: T&E Tools.

Vendor: Hurley Write, Inc.

Additional Course Information: Classroom, 3 days.

Who Should Take This Training: T&E personnel, T&E personnel.

**CTE-LTI-216 System And Network Security Introduction**

Description: This beginner-level class is for those who require the fundamental skills to develop and implement security schemes designed to protect their organization’s information from threats. This course teaches the knowledge and skills to effectively and accurately analyze the security risks to computer and network systems. This class also teaches students to view security from the standpoint of the attacker, enabling a more successful implementation of internet and system defenses. The issues of authentication, confidentiality, integrity, and availability form the core of the necessary analysis.

Program of Study: T&E Tools.

Vendor: Learning Tree.

Additional Course Information: Classroom, 4 days.

Who Should Take This Training: T&E personnel.

**CTE-LTI-217 Windows Server 2008 Administration**

Description: The Windows Server 2008 Administration course is a comprehensive server administration class for individuals managing Windows Server 2008 environments. Attendees learn
the key techniques available to them in the operating system as well as best practices for server management. The focus is on managing, optimizing, troubleshooting and securing the operating system, regardless of the server’s role in the enterprise. In this course, students will learn to maintain, troubleshoot and secure Windows Server 2008; to implement key security components to protect your server; to leverage built-in components for a highly available infrastructure; to optimize and tune system performance for greater responsiveness; to troubleshoot system issues with tools and techniques; and to recover from systems failures.

Program of Study: T&E Tools.

Vendor: Learning Tree.

Additional Course Information: Classroom, 4 days.

Who Should Take This Training: T&E personnel.

**CTE-LTI-218 Windows Powershell: Automating Administrative Tasks**

Description: This course is about administrating systems with Windows PowerShell to automate repetitive tasks and ensure complex, error-prone routines are performed consistently. Students will learn how to manage both interactive commands at the PowerShell command prompt as well as PowerShell scripting, including flow control, looping and error handling. This course is valuable for administrators who want to automate tasks using PowerShell on Windows systems, applications and servers, including Exchange Server, SQL Server and Microsoft System Center products. Students will learn to administer workstations, servers and applications with PowerShell 4.0; to manage script execution with pipelining and flow control operators; to leverage WMI for hardware inventories and software configuration; to create and manage Active Directory objects using native PowerShell commands; and to fashion simple graphical user interfaces for production scripts.

Program of Study: T&E Tools.

Vendor: Learning Tree.

Additional Course Information: Classroom, 4 days.

Who Should Take This Training: T&E personnel.

**CTE-LTI-219 Switches And Routers: A Comprehensive Hands-On Introduction**

Description: Switches and routers are the critical building blocks of a successful internetwork infrastructure. This course will allow students to gain the essential knowledge required to deploy and use switches and routers in IP networks. Through a combination of written and hands-on exercises, the student will acquire the skills to effectively select and deploy appropriate internetworking technologies. During this course, students will learn how to build and design scalable networks, configure and monitor switches and routers on a network, set up Ethernet and wireless LANs, deploy switches using Spanning Tree and VLANs, employ LAN interconnection techniques, and design and implement a routed network.

Program of Study: T&E Tools.
Vendor: Learning Tree.

Additional Course Information: Classroom, 4 days.

Who Should Take This Training: T&E personnel.

**CTE-MTL-210 MATLAB Basics I**

Description: MATLAB Basics I is directed toward flight test engineers, test managers, civilian, and military within the NAVAIR 5.0 Test & Evaluation organization. This unique training opportunity introduces MATLAB to new or beginning users looking to improve their familiarity with the software and its many capabilities. This course is designed to teach the knowledge and skills necessary to import flight test data, process data, make report quality graphs, and improve these tools with automation and programming. Building Graphical User Interfaces (GUIs) will be introduced, but not covered in depth. MATLAB Basics I covers introduction to the MATLAB environment and the many interactive features available to import, process, and visualize your data.

Program of Study: T&E Tools.

Vendor: CT&E.

Additional Course Information: Classroom, 5 days.

Who Should Take This Training: T&E personnel.

**CTE-MTL-216 MATLAB Basics II**

Description: MATLAB Basics II is directed toward flight test engineers, test managers, civilian, and military within the NAVAIR 5.0 Test & Evaluation organization. This unique training opportunity introduces MATLAB to new or beginning users looking to improve their familiarity with the software and its many capabilities. This course is designed to teach the knowledge and skills necessary to import flight test data, process data, make report quality graphs, and improve these tools with automation and programming. Building Graphical User Interfaces (GUIs) will be introduced, but not covered in depth. MATLAB Basics II expands on the MATLAB environment and interactive features in greater detail and introduce programming techniques to automate these processes.

Program of Study: T&E Tools.

Vendor: CT&E.

Additional Course Information: Classroom, 2 days.

Who Should Take This Training: T&E personnel.

**CTE-MTL-211 Advanced MATLAB**

Description: Advanced MATLAB is directed toward flight test engineers, test managers, civilian, and military within the NAVAIR 5.0 Test & Evaluation organization. This unique training opportunity combines MATLAB for data processing and visualization, programming techniques, and building graphical user interfaces (GUIs). This training focuses on data management and visualization.
techniques, creating scripts, writing efficient and well-organized code, and effective use of interface controls. Topics include: MATLAB data manipulation, Programming for accuracy, Structuring data and code, Using and creating classes and objects, Handle graphic objects, User interface controls, Graphical user interface development environment (GUIDE), GUI deployment.

Program of Study: T&E Tools.

Vendor: The MathWorks, Inc.

Additional Course Information: Classroom, 3 days.

Who Should Take This Training: T&E personnel.

**CTE-MTL-212 Image Processing**

Description: Image Processing for MATLAB is directed toward flight test engineers, test managers, civilian, and military within the NAVAIR 5.0 Test & Evaluation organization. This unique training opportunity introduces different methods for extracting features and objects within an image, image registration, and reconstructing images and objects. Furthermore, students will explore the different types of image representations, as well as how to enhance image characteristics, filter an image, and reduce the effects of noise and blurring in an image.

Program of Study: T&E Tools.

Vendor: The MathWorks, Inc.

Additional Course Information: Classroom, 2 days.

Who Should Take This Training: T&E personnel.

**CTE-MTL-213 Signal Processing - Electronic Warfare**

Description: Signal Processing – Electronic Warfare (EW) is directed toward flight test engineers, test managers, civilian, and military within the NAVAIR 5.0 Test and Evaluation organization. This customized signal training will teach students how to analyze signals and design signal processing systems using EW. Student will learn how to create and analyze signals, use different spectral analysis tools, design and analyze filters and address filter implementation issues.

Program of Study: T&E Tools.

Vendor: The MathWorks, Inc.

Additional Course Information: Classroom, 2 days.

Who Should Take This Training: T&E personnel.

**CTE-MTL-214 Signal Processing MATLAB**

Description: Signal Processing for MATLAB is directed toward flight test engineers, test managers, civilian, and military within the NAVAIR 5.0 Test & Evaluation organization. This unique training opportunity shows how to analyze signals and design signal processing systems using MATLAB,
Signal Processing Toolbox, and Filter Design Toolbox. At the end of this 2 day course students will know how to: create and analyze signals, utilize different spectral analysis tools, design and analyze filters, understand advanced filter design, address filter implementation issues.

Program of Study: T&E Tools.

Vendor: The MathWorks, Inc.

Additional Course Information: Classroom, 2 days.

Who Should Take This Training: T&E personnel.

**CTE-MTL-215 Simulink-Aero/Controls**

Description: Simulink-Aero/Controls is directed toward flight test engineers, test managers, civilian, and military within the NAVAIR 5.0 Test & Evaluation organization. This 3 day training opportunity provides custom training geared towards beginner system and algorithm modeling and design in Simulink. Through basic modeling techniques and tools, it shows how to develop Simulink block diagrams. Students will learn modeling single-channel and multichannel discrete-time systems, implementing sample-based and frame-based processing, and developing custom blocks and libraries. This course will also explore a validating designs using Simulink.

Program of Study: T&E Tools.

Vendor: The MathWorks, Inc.

Additional Course Information: Classroom, 3 days.

Who Should Take This Training: T&E personnel.

**CTE-MTL-217 MATLAB Fundamentals**

Description: This course provides a comprehensive introduction to the MATLAB technical computing environment. This course is intended for beginning users and those looking for a review. The course is structured to allow thorough assimilation of ideas through hands-on examples and exercises. Attendees will develop MATLAB competency in a natural way, with an emphasis on practical application. The course explores themes of data analysis, visualization, modeling, and programming.

Program of Study: T&E Tools.

Vendor: The MathWorks, Inc.

Additional Course Information: Classroom, 3 days.

Who Should Take This Training: T&E personnel.

**CTE-MTL-218 Signal Processing With Simulink**

Description: This course is for signal processing engineers who are new to system and algorithm modeling and design in Simulink. Through basic modeling techniques and tools, it shows how to develop Simulink block diagrams.
Program of Study: T&E Tools.

Vendor: The MathWorks, Inc.

Additional Course Information: Classroom, 3 days.

Who Should Take This Training: T&E personnel.

CTE-MTL-219 MATLAB And Simulink For Control Design Acceleration

Description: MATLAB and Simulink for Control Design Acceleration is a hands-on course designed to provide a general understanding of how to use The MathWorks suite of control system design tools to accelerate the design process for closed loop control systems. This class will focus on: model formats; system analysis; linearization, and compensator design.

Program of Study: T&E Tools.

Vendor: The MathWorks, Inc.

Additional Course Information: Classroom, 1 day.

Who Should Take This Training: T&E personnel.

CTE-WLE-212 ODE 102 OMEGA Data Environment

Description: This course will cover use of Omega Desktop. This class will provide those users who will primarily use the Omega Desktop to analyze data. Topics to include will be overview of desktop functions, viewing data, derived parameters, inserting filters, creating lists, inserting records, creating output files, and other useful tools for the Omega Desktop user. This course will also cover other topics brought up in class.

Program of Study: T&E Tools.

Vendor: Wyle Information Assurance Academy.

Additional Course Information: Classroom, 1 day.

Who Should Take This Training: T&E personnel.

CTE-NAI-210 LabVIEW Core 1

Description: LabVIEW Core 1 & 2 helps students explore the LabVIEW environment, dataflow programming, and common LabVIEW architectures in a hands-on format. Learn to develop data acquisition, instrument control, data-logging, and measurement analysis applications. At the end of the course, students will be able to create applications using basic design templates and architectures to acquire, process, display, and store real-world data.

Program of Study: T&E Tools.

Vendor: National Instrument Corp.

Additional Course Information: Classroom, 5 days.
Who Should Take This Training: T&E personnel.

**CTE-ANM-210 VFX Fundamentals Animation Mentor Target And Threat**

Description: This course is comprised of three sections—CG Basics, Lighting Basics, and Compositing Basics—with each section being a 12-week session. CG Basics teaches the basics of VFX with modeling and surfacing, and progresses to lighting and compositing. This gives the student a full sense of how all the pieces fit together to create the finished visual effects graphic. The Lighting Basics portion teaches how to convey an idea centered upon visual storytelling using light, shape, and color. Lighting Basics bridges lighting concepts for CG feature animation with lighting for feature VFX. These are similar, overlapping skill sets and workflows that students will resource and develop in later VFX studies. This course enables students to work with a mix of live-action and CG elements to provide a critical understanding of the complete VFX production process, participating in both lighting of elements and final assembly of the composite.

Program of Study: Target and Threat Systems T&E.

Vendor: Animation Mentor.

Additional Course Information: Classroom, 36 weeks.

Who Should Take This Training: T&E personnel.

**CTE-BLF-210 Electro Static Discharge (ESD) Prevention**

Description: This course is designed to heighten the awareness of each student’s role in controlling electrostatic discharge as it relates to electronic assemblies. This course will teach students the basic concepts of static electricity, define ESD and the causes of electrostatic discharge and the effect it may have on sensitive products they handle. In addition, this course will demonstrate the correct method for using and testing personal protective devices.

Program of Study: Target and Threat Systems T&E.

Vendor: Blackfox.

Additional Course Information: Classroom, 1 day.

Who Should Take This Training: T&E personnel.

**CTE-EDA-210 DxDesigner Pads Flow**

Description: This course teaches students how to input and layout both hieratical and flat schematic diagrams. Students will learn how to use associated software like Dashboard for project management and DxDatabook to select, add and verify components for schematics. Hands-on lab exercises help students learn how to verify, check and prepare final schematic design for interfacing with Pads Layout and Signal Integrity Analysis.

Program of Study: Target and Threat Systems T&E.

Vendor: EDA Direct.
Additional Course Information: Classroom, 2 days.

Who Should Take This Training: T&E personnel.

**CTE-EDS-200 Introduction To Electro-Optic Systems**

Description: Fundamentals of Electronic Defense Systems introduces students to concepts in aviation anti-submarine warfare (AASW), electronic warfare (EW), and electro-optic systems (EOS). AASW topics include the physics of underwater sound and their application to anti-submarine tactics. EW topics include a brief history of EW, Radio Frequency (RF) propagation theory, radar system design architecture and characteristics of operation, EW operational missions, battlefield communications networks / systems and characteristics of operation, and future EW challenges. EOS topics include descriptions and use of infrared (IR), forward looking infrared (FLIR), and infrared search and track (IRST) systems.

Program of Study: Target and Threat Systems T&E.

Vendor: CT&E.

Additional Course Information: Classroom, 3 days.

Who Should Take This Training: T&E personnel

**CTE-EMA-200 ORCAD PCB Editor EMA Design Automation**

Description: This three day course introduces the student to the OrCAD PCB Editor. It covers all the necessary steps for designing a printed circuit board, from loading logic/netlist data through producing manufacturing/NC output. Students will be familiar with the common user interfaces for both the Cadence OrCAD PCB Editor and the Cadence Allegro PCB Editor.

Program of Study: Target and Threat Systems T&E.

Vendor: EMA Design Automation.

Additional Course Information: Classroom, 3 days.

Who Should Take This Training: T&E personnel

**CTE-EWP-200 Electronic Warfare Compatibility - Test Evaluation (T&E) Principles**

Description: This class provides the principles of Test Evaluation (T&E) associated with electronic warfare compatibility. This instructional material, designed for advanced/journeymen personnel, covers planning, testing, and analyzing effects of Electromagnetic Interference (EMI) on communication radios, Unmanned Aerial Vehicle for Surveillance (UAVS), and other Blue Force equipment that utilize Radio Frequency (RF); focusing in particular on EMI effects on Blue systems and Hardware-in-the-Loop (HWIL) testing of these RF effects. The core material is composed of lectures, five (5) class exercises, tour of testing activities, and a hands-on bench testing in the laboratory along with bench calibration instruction. Students will develop the conceptual tools, knowledge, and skills along with the processes involved to collect, analyze, and report data.
Program of Study: Weapons T&E.

Vendor: CT&E.

Additional Course Information: Classroom, 1 day.

Who Should Take This Training: T&E personnel.

CTE-TGS-210 Tactical Combat Casualty Care

Description: In this course students learn how to work safely around ordnance and weapons, covering the basic medical skills needed in an emergency environment. By understanding what can go wrong and how to appropriately respond when it does, students learn to keep safety and risk mitigation in mind while working around potentially hazardous equipment.

Program of Study: Weapons T&E.

Vendor: The Range Complex, LLC.

Additional Course Information: Classroom, 1 day.

Who Should Take This Training: T&E personnel.

CTE-TOM-200 Introduction To Tomahawk Cruise Missile Test And Evaluation (T&E)

Description: Students receive an introduction and familiarization of the Tomahawk cruise missile. Students are presented with a variety of topics from the history and evolution through flight test, planning, execution, and evaluation process of Tomahawk Test and Evaluation. Students will gain an in-depth understanding of the Tactical Tomahawk Weapon Control System (TTWCS) aboard the firing units and their functions for launching Tomahawk cruise missiles; Tomahawk mission planning, validation, strike planning and execution processes; missile configurations, subsystems and their functions, and Tomahawk flight test operations that concentrate on flight test planning, execution, and evaluation for the Tomahawk Test and Evaluation Team. At completion of this instruction, students receive a tour of the AST-5B laboratory.

Program of Study: Weapons T&E.

Vendor: CT&E.

Additional Course Information: Classroom, 5 days.

Who Should Take This Training: T&E personnel.

School of Operational T&E

CTE-COM-211 Mission Based T&E

Description: This course is a 2-day series of lessons and exercises that exposes students to the Commander, Operational Test & Evaluation Force (COMOPTEVFOR’s) 11-step process for test planning. For more information visit http://www.cotf.navy.mil/ot_framework.htm.
Program of Study: Operational T&E.

Vendor: COMOPTEVFOR.

Additional Course Information: Classroom, 2 days.

Who Should Take This Training: T&E personnel.

CTE-IEF-200 Integrated Evaluation Framework

No course description provided. Please contact Kerstin Howard, Administrator, CT&E, NAVAIR for more information: 301-757-6788, kerstin.howard.ctr@navy.mil.

CTE-OTD-200 Operational Test Director

No course description provided. Please contact Kerstin Howard, Administrator, CT&E, NAVAIR for more information: 301-757-6788, kerstin.howard.ctr@navy.mil.

School of T&E Management

CTE-APM-100 STEM Bootcamp

Description: The Systems Test and Experimentation Management (STEM) Boot Camp is a five-day course in the School of Test and Evaluation Management for APMT&Es, LTEs, and management personnel in the AIR-5.1.1 STEM Division. The course is organized into five subject areas: Roles and Responsibilities, Core and Non-Core Processes, Fundamentals of Leadership, Test and Evaluation Capabilities, and the tools used by the STEM Division and AIR-5.0. Roles and Responsibilities focuses on the organizational structure of the agencies, charters, and teams responsible for initiating, planning, and executing T&E flight test. These modules present key management expectations and interaction with other stakeholders in the T&E and program management enterprise. The Core and Non-Core Process modules explore the policies and processes associated with T&E management and execution. Core Processes includes NAVAIR Instructions of Acquisition T&E, Test Team Formation, Test Requirements Definition and Concurrence, and the Test and Evaluation Program Assessment. Non-Core Processes present the critical processes used by AIR-T&E personnel, but not owned by test and evaluation. These processes, owned by stakeholders such as engineering, cost, and logistics, establish roles and responsibilities and information flow paths when working with T&E players in other partner departments of NAVAIR. Fundamentals of Leadership analyzes the qualities and styles of management that make a successful NAVAIR leader. Leadership styles, effective communication, team building, and conflict management are explored through classroom lecture and team building exercises. The exercises help students determine their personal style, then provide them with ideas of how to apply their skills to a wide range of personality types within their organizations. In T&E Capabilities, students gain a clear understanding of the capabilities and resources of the other AIR-5.0 departments, and the engagement process for coordinating test events with them. Departments include AIR-5.2 Ranges, AIR-5.3 Threat/Target Systems, and AIR-5.4 Integrated Battle-space Simulation and Test. The Tools subject area takes an in-depth look at the essential tools used by AIR-5.1.1 that support the test and evaluation process.

Program of Study: Acquisition T&E Management.
Vendor: CT&E.

Additional Course Information: Classroom, 5 days.

Who Should Take This Training: T&E personnel.

CTE-IEF-200 Integrated Evaluation Framework

*No course description provided.* Please contact Kerstin Howard, Administrator, College of Test and Evaluation (CT&E), NAVAIR for more information: 301-757-6788, kerstin.howard.ctr@navy.mil.

CTE-NST-200 N84 Strategies For T&E

Description: This course is structured to provide development and training across DON for T&E Key Leadership Positions (KLPs)/Chief Developmental Testers (CDTs) for MDAPs/MAISs, Assistant Program Manager (APM) T&E, Program T&E Leads and Test Leads. It will provide workforce members with T&E concepts, principles and best practices with a focus on TEMP development.

Program of Study: T&E Management and Acquisition T&E

Vendor: DON T&E Office, DASN RDT&E/N84C

Additional Course Information: Classroom, 2 day.

Who Should Take This Training: T&E personnel and APM T&E.

CTE-NTS-210 Safety Seminar On TWA800

Description: This seminar is hosted by the National Transportation Safety Board (NTSB) to demonstrate lessons learned from NTSB’s accident investigations involving instructional accidents.

Program of Study: Acquisition T&E.

Vendor: National Transportation Safety Board (NTSB).

Additional Course Information: Classroom, 1 day.

Who Should Take This Training: T&E personnel.

CTE-OTF-200 Operational Testing Fundamentals Overview

Description: The Operational Test (OT) Fundamentals course is designed to explain OT requirements, methods, and best practices in order to enhance interactions between the Program Offices and OT personnel. A shared understanding of OT will provide APM T&Es and LTEs with in-depth appreciation of the role of COTF and OT personnel, as well as their contributions to the success of integrated system designs.

Program of Study: Acquisition T&E Management.

Vendor: CT&E.
Additional Course Information: Classroom, 2 days.

Who Should Take This Training: T&E personnel.

CTE-OTR-200 Certification Of Readiness For Operational Test

Description: The class provides information about the Operational Test Readiness Review (OTRR) process, preparation for and development of the OTRR brief, and post-OTRR follow-up requirements. After completing this course, students should understand: The purpose of the OTRR, the governing DoD/SECNAV/NAVAIR policy for OTRRs, the SECNAV Certification Criteria/NAVAIR OTRR Process, how to prepare a Pre-OTRR/OTRR brief, the post Pre-OTRR/OTRR actions required, and the NAVAIR Operational Assessment Maturity Review (OAMR).

Program of Study: Acquisition T&E Management.

Vendor: CT&E.

Additional Course Information: Classroom, 3 hours.

Who Should Take This Training: T&E personnel.

CTE-SLS-201 Writing Testable Requirements For Successful Programs

Description: This course explains the importance of writing testable requirements early in the development program. Measures of good requirements are examined with examples derived from recent test and evaluation programs. Students apply requirements knowledge gained to build a requirements verification matrix thus forming the basis for a test program. The exercise includes using traditional and non-traditional methods of inspection, analysis, demonstration, test, and simulation to populate the matrix.

Program of Study: Acquisition T&E Management.

Vendor: CT&E.

Additional Course Information: Classroom, 1 hour.

Who Should Take This Training: T&E personnel.

CTE-TEM-210 ABCs Of Effective Feedback

No course description provided. Please contact Kerstin Howard, Administrator, CT&E, NAVAIR for more information: 301-757-6788, kerstin.howard.ctr@navy.mil.

CTE-WBB-210 How Washington Works

No course description provided. Please contact Kerstin Howard, Administrator, CT&E, NAVAIR for more information: 301-757-6788, kerstin.howard.ctr@navy.mil.
CTE-DAU-211 Logistics T&E

Description: The Logistics Test and Evaluation Course provides an overview of DoD Directorate 5000.01 and DoD Instruction 5000.02 as well as acquisition processes involved with systems engineering, test and evaluation, acquisition logistics (including reliability, maintainability, and availability), and contractor operations and test reporting.

Program of Study: Test Execution Management.

Vendor: Defense Acquisition University.

Who Should Take This Training: T&E personnel.

CTE-DAU-210 T&E Across The Acquisition Lifecycle

Description: The overall objective of this course is to provide students with the knowledge and skills needed to effectively perform the role of Assistant Program Manager for Test and Evaluation (APMT&E) and Lead Test Engineer (LTE) for their perspective programs. The course will concentrate on the interaction between T&E, Systems Engineering and Acquisition in accordance with the DoD Integrated Defense Acquisition, Technology, and Logistics Life Cycle Management System; DoDI 5000.2; NAVAIR Systems Engineering Technical Review (SETR) Process, NAVAIR INST 4355.19; and the NAVAIR Instruction 3960.2, and associated instructions.

Program of Study: Test Execution Management.

Vendor: Defense Acquisition University.

Who Should Take This Training: T&E personnel.

CTE-NPS-211 Advanced T&E Planning And Experimental Design

Description: This intensive 4-day course is designed to address the Test Planning and test Experimental Design methodologies, analysis, and evaluation used in military testing and the acquisition process. This course applies the numerous lessons learned from major T&E programs from the U.S. and around the world. It introduces the latest concepts in experimental design and simulation for testing, evaluation, and experimentation. The course will be taught from the various perspectives of the program manager, contractor, test project office and engineer, test analyst, and statistician.

Program of Study: Test Resource & Information Management.

Vendor: Naval Postgraduate School (NPS).

Who Should Take This Training: T&E personnel.
CTE-SLS-202 Developing Rainbow Charts

Description: This lecture is part of the Systems Test and Experimentation Management (STEM) Lecture Series and presents the uses and functions of a rainbow chart as a tool to develop and track a test schedule, perform overall program planning, and cross-communicate between Integrated Program Teams (IPT). Department-wide, AIR-5.0 requires teams to use the Integrated Test and Evaluation Schedule Tool (iTEST) to consolidate internal and external T&E schedules to enable this type of strategic planning. SLS-202 examines the rainbow charts functionality of iTEST in order to create the quick-look program offices need. For frequent users of iTEST, more in-depth training is available through CT&E: CTE-IT-111 iTEST User Training for APMT&Es and CTE-IT-112 iTEST User Training for Platform Coordinators.

Program of Study: Test Resource & Information Management.

Vendor: CT&E.

Additional Course Information: Classroom, 1.5 days.

Who Should Take This Training: T&E personnel.

School of Modeling and Simulation for T&E

CTE-GBK-212 Certified Ethical Hacker

No course description provided. Please contact Kerstin Howard, Administrator, College of Test and Evaluation (CT&E), NAVAIR for more information: 301-757-6788, kerstin.howard.ctr@navy.mil.

TE-GIT-221 Airborne EW System Integration

Description: Airborne EW System Integration is an unclassified course on one of the most challenging problems currently faced by the EW community. It begins with an overview of computers, sensors and networks existing in everyday life and transitions easily understandable concepts to airborne integration approaches and lessons learned. It covers aircraft bus structures and requirements, EW systems, aircraft avionics, aircraft physical environment, approaches to EW system integration, integrated system testing and integrated EW system evolution. Assessment for this course will be through multiple choice quizzes given daily.

Program of Study: N/A.

Vendor: Georgia Tech Professional Education.

Additional Course Information: Classroom, 3 days.

Who Should Take This Training: T&E personnel.
**CTE-GIT-227 Cyber / Electronic Warfare Convergence**

Description: This course will help engineers, designers, and others gain foundational knowledge of the board implications of cyber/electronic warfare convergence, infrastructure and communication impacts, network attack vectors and vulnerability analysis. Objectives: 1) Provide foundational knowledge of cyber warfare, electronic warfare, and the convergence of the two; 2) Identify how critical infrastructure and communications systems must adapt to the integration of these domains, 3) Explore network attack techniques and tools for assessing vulnerabilities; 4) Practice newly learned skills through workshops and other hands-on activities.

Program of Study: N/A.

Vendor: Georgia Tech Professional Education.

Additional Course Information: Classroom, 2 days.

Who Should Take This Training: T&E personnel.

**CTE-MSC-200 Contracting For Modeling And Simulation**

Description: The goal of this course is to improve students’ knowledge of modeling and simulation (M&S) contracting tools so that they may become better buyers of M&S support. Designed for program managers, Assistant Program Managers Test and Evaluation (APMT&E), modeling and simulation (M&S) professionals, and the acquisition workforce who are involved in the contracting of M&S tools, data, resources, and services—this course will explain M&S contracting language and discuss various types of contracts, requests for proposal (RFP), contract development, open systems strategy, statements of work (SOW), and statements of objectives (SOO), and contracting language. Students will discuss examples of contracting language for M&S data rights, verification, validation, and accreditation (VV&A), and source selection.

Program of Study: N/A.

Vendor: CT&E.

Additional Course Information: Classroom, 2 days.

Who Should Take This Training: Program managers, APMT&E, M&S professionals, and acquisition personnel involved in contracting of M&S tools, data, resources, and services.

**CTE-MSE-200 Senior Leadership Modeling And Simulation Session**

Description: This course is designed for Senior Executives, PEOs, and Senior Military personnel to fully appreciate the roles that M&S plays in every aspect of the acquisition lifecycle. The course emphasizes better risk management earlier in the lifecycle and how M&S supports the Commander’s emphasis on Integrated Warfighting Capabilities (IWC) and Interoperability and Integration (I&I) by utilizing M&S throughout program acquisition.

Program of Study: N/A.

Vendor: CT&E.
Additional Course Information: Classroom, 4 hours.

Who Should Take This Training: Senior executives, PEOs, and senior military personnel.

**CTE-MSP-200 Modeling And Simulation Best Practices**

*No course description provided. Please contact Kerstin Howard, Administrator, CT&E, NAVAIR for more information: 301-757-6788, kerstin.howard.ctr@navy.mil.*

**CTE-MSR-100 Modeling And Simulation Capabilities And Resources**

Description: Students will gain knowledge and an understanding of modeling and simulation (M&S) components and how M&S can be used throughout the acquisition lifecycle to reduce cost and schedule by providing better risk management information. The course will discuss the role of M&S in the design process, as a tool used to evaluate system performance, and the benefits to test and evaluation strategy and program execution. In addition, students will get exposure to the broad range of M&S capabilities and resources and an understanding of M&S in support of Integrated Warfighting Capability (IWC), Integration & Interoperability (I&I), System of Systems (SoS), and Capability-Based Research Development Test and Evaluation (RDT&E).

Program of Study: N/A.

Vendor: CT&E.

Additional Course Information: Classroom, 2 days.

Who Should Take This Training: Program managers, APMT&Es, M&S professional community, IPT leads, and acquisition personnel.

**CTE-MSS-200 Modeling And Simulation Support Plan (MSSP)**

Description: In this course, students receive an overview for utilizing the modeling and simulation support plan (MSSP) as a best practice to efficiently leverage M&S as a risk management tools within their programs. The course explains the purpose of the MSSP and provides examples of how it can be used to ensure a rigorous and consistent employment of M&S across the acquisition lifecycle. The course includes discussion on: the M&S planning process and its relationship to the lifecycle phases of development and acquisition milestone decisions; program cost, schedule, and performance considerations; trade-off decisions; and effectiveness assessment. Special focus areas include: planning for an M&S organization; contracting considerations; interoperability and reuse considerations (open architecture, reuse of existing infrastructure and integration of government and contracted components); modeling, simulation, and analysis (MS&A); acquisition lifecycle support; M&S environment (scenario, common development, labs, facilities, software in the loop (SIL) connectivity); and verification, validation, and accreditation (VV&A). Course exercises include developing an integrated simulation support plan (SSP), systems engineering plan (SEP), and a test and evaluation master plan (TEMP).

Program of Study: N/A.

Vendor: CT&E.
CTE-ODU-210 Introduction To Modeling And Simulation

Description: This is the first course in the Modeling and Simulation (M&S) Certificate program. The M&S discipline is surveyed at an overview level of detail. Definitions, paradigms, applications, and sub-disciplines are introduced. This course orients students to the Old Dominion University Modeling and Simulation Graduate Program and provides a general conceptual framework for further M&S studies.

Program of Study: M&S Certificate.

Vendor: Old Dominion University.

Additional Course Information: Classroom, 3 days.

Who Should Take This Training: IPT Leads, M&S professional workforce and T&E personnel.

CTE-ODU-211 Simulation Fundamentals

Description: This is the second course in the Modeling and Simulation (M&S) Certificate program is an introduction to the M&S discipline. Students are introduced to discrete event simulation (DES), including simulation methodology, input data modeling, output data analysis, and an overview of DES tools. Students are also introduced to continuous simulation (CS) including simulation methodology, differential equation models, numerical solution techniques, and an overview of CS tools.

Program of Study: M&S Certificate.

Vendor: Old Dominion University.

Additional Course Information: Computer-based, 1 week, 3 credits.

Who Should Take This Training: Program managers, APMT&Es, acquisition and M&S professionals, IPT leads.

CTE-ODU-212 Simulation Design

Description: This is the third course in the M&S Certificate program develops the students’ skills necessary for the design and development of simulation software. Topics covered include software architectures, software engineering, software design, object-oriented programming, abstract data types and classes, data structures, algorithms, and testing and debugging techniques. The course emphasizes software design and development of simulation systems (discrete-event, continuous, and Monte Carlo).

Program of Study: M&S Certificate.

Vendor: Old Dominion University.
Additional Course Information: Computer-based, 1 semester, 3 credits.

Who Should Take This Training: Program managers, APMT&Es, acquisition and M&S professionals, IPT leads.

**CTE-ODU-213 System Architecture And Modeling**

Description: In this fourth and final course in the M&S Certificate program, students will learn the essential aspects of the system architecture paradigm through environment and analysis of multiple architecture framework and enterprise engineering, such as IDEFO, TOGAF, DODAF and OPM.

Program of Study: M&S Certificate.

Vendor: Old Dominion University.

Additional Course Information: Computer-based, 1 semester, 3 credits.

Who Should Take This Training: Program managers, APMT&Es, acquisition and M&S professionals, IPT leads.

**CTE-RHT-210 Red Hat System Administration I**

Description: are new to Linux and require core Red Hat Enterprise Linux skills. This course focuses on essential administration tasks that will be encountered in the workplace, including the operating system, establishing network connectivity, managing physical storage, and performing basic security administration. Early in the course, GUI-based tools will be featured to build upon the students’ existing technical knowledge. As the course progresses, key command-line concepts will be introduced to provide a foundation for students planning to continue to Red Hat System Administration II with the goal of becoming full-time Linux system administrators. Topics covered include graphical installation of Linux, managing physical storage, using the command line, installing and configuring local components and services, establishing network and securing network services, managing and securing files, administrating users and groups, deploying file-sharing services, using GUI-based tools and key command-line concepts, and basic security skills.

Vendor: Red Hat.

Additional Course Information: Classroom, 5 days.

Who Should Take This Training: T&E personnel.

**CTE-RHT-211 Red Hat System Administration II**

Description: Red Hat System Administration II is a follow-up course for students that have completed Red Hat System Administration I. It is designed for IT professionals working to become full-time enterprise Linux system administrators. Building on the foundation of command-line skills covered in System Administration I, students will dive deeper into Red Hat Enterprise Linux to broaden their toolkits of administration skills. By the end of this course, students will be able to administer and troubleshoot file systems and partitioning, local volume management, access control, and package management. Students who attend Red Hat System Administration I and II will be fully prepared to take the Red Hat Certified System Administration (RHCSA) exam. Course topics
include network configuration and troubleshooting; managing file systems and logical volumes; controlling user and file access; installing and managing services and processes; essential command-line operations; troubleshooting file systems and partitioning; and LVM, access control, and package management.

Vendor: Red Hat.

Additional Course Information: Classroom, 5 days.

Who Should Take This Training: T&E personnel.

**CTE-SEI-210 Secure Coding in C and C++**

Description: Secure Coding in C and C++ provides practical advice on secure practices in C and C++ programming. Producing secure programs requires secure designs. However, even the best designs can lead to insecure programs if developers are unaware of the many security pitfalls inherent in C and C++ programming. This course provides a detailed explanation of common programming errors in C and C++ and describes how these errors can lead to code that is vulnerable to exploitation.

Vendor: Software Engineering Institute.

Additional Course Information: Classroom, 4 days.

Who Should Take This Training: T&E personnel.

**CTE-SEI-211 Applied Cybersecurity, Incident Response And Forensics**

Description: This hands-on course is targets technical staff charged with administering and securing information systems and networks. Security topics such as vulnerability assessment, systems administration, network monitoring, incident response, and digital forensics will offer a comprehensive defense-in-depth experience. Each participant will have direct administrative access to a wide variety of networked systems (Windows, Linux and Cisco), which will be modified and instrumented throughout the course. Instruction will consist of individual labs and team-based exercises modeled from real-world threat scenarios.

Vendor: Software Engineering Institute.

Additional Course Information: Classroom, 5 days.

Who Should Take This Training: T&E personnel.

**CTE-VVA-200 Introduction To Verification, Validation, And Accreditation (VV&A)**

Description: This course provides students with knowledge of efficient VV&A tools to effectively employ VV&A in support of modeling and simulation (M&S). The course will emphasize to students the importance of leveraging VV&A within M&S using examples of how VV&A is used throughout the acquisition lifecycle. Student will learn how to develop acceptable acceptance criteria for accreditation planning, implementing, documenting and reporting VV&A results. Student will examine VV&A costs vs. benefits and examples of results, best practices and tools.
Vendor: CT&E.

Additional Course Information: Classroom, 5 days.

Who Should Take This Training: APMSEs, APMT&Es, APMLs, ESDPs, IPT leads, and VV&A professionals.

**CTE-WSD-200 Operational Warfighting Scenario Development For Test And Evaluation/Net-Centric Evaluation Capability Module**

Description: The Operational Warfighting Scenario Development for Test and Evaluation (T&E)/Net-Centric Evaluation Capability Module (NECM) trains students on NECM. NECM addresses Net-Centric T&E technology gaps in the ability to efficiently apply mission threat architectures and associated measures to the instrumentation and analysis of interoperability and mission effectiveness.

Vendor: CT&E.

Additional Course Information: Classroom, 2 days.

Who Should Take This Training: T&E personnel.
As the Navy’s Information Dominance systems command and technical lead for C4ISR, SPAWAR provides the hardware and software to connect naval warfighters at sea, on land and in the air. SPAWAR provides a full lifecycle of product and service delivery from the initial research and development, to acquisition and deployment, to operations and logistics support.

SPAWAR is one of three major Department of Navy acquisition commands. While other systems commands focus on tangible platforms, information is SPAWAR’s platform which transforms ships, aircraft and vehicles from individual platforms into integrated battle forces, delivering and enhancing information dominance and awareness among Navy, Marine, joint forces, federal agencies and international allies.

SPAWAR is organized into eight competencies: finance, contracts, legal, logistics and fleet support, engineering (with its supporting Test, Evaluation and Certification (TE&C) competency), program and project management, science and technology, and corporate operations. SPAWAR provides support to three Navy Program Executive Offices (PEOs) that are: PEO Command, Control, Communications, Computers and Intelligence (PEO C4I), PEO Enterprise Information Systems (PEO EIS) and PEO Space Systems.

SPAWAR TE&C courses utilize local classroom and online computer based training. For registration and availability of T&E-related courses listed below, please contact Jeff King at 843-218-6960, or at jeffrey.d.king1@navy.mil.

**Agile Software Testing**

Description: The purpose of this course is to address the Agile Software testing concepts and practical applications for SPAWAR systems. Agile is a way of thinking and process that must be pervasive throughout the program’s acquisition and test strategy to be fully effective. Agile developers and testers must have greater collaboration, shorter work (i.e., sprint) cycles, utilize test driven design, embrace change and have greater flexibility in their strategy and plans so that functionality is released incrementally.

Who Should Take This Training: All designated TE&C personnel (i.e., personnel with TE&C as a Primary or Secondary Competency) and other personnel performing TE&C functions.

**Risk Management Framework**

Description: The purpose of this course is to address the new Cybersecurity T&E policy and requirements specifying use of a Risk Management Framework (RMF) for DOD Information Technology. RMF replaces the DOD Information Assurance Certification and Accreditation Process (DIACAP) and assigns program governance and development roles for DOD CIO, DASD DT&E and DOT&E and the Services activity in a collaborative fashion across the DT&E and OT&E elements of a program.
Who Should Take This Training: All designated TE&C personnel (i.e., personnel with TE&C as a Primary or Secondary Competency) and other personnel performing TE&C functions.

**Human Systems Integration Testing**

Description: The purpose of this course is to address the Human Systems Integration (HSI) process to integrate human factors and ergonomics into the systems engineering and T&E process for acquisition programs. Explore the principles of human factors involving personnel selection, training, safety and other HSI technical domains, to include design and test. Learn how these activities across these separate areas should be integrated to reduce costs and improve system performance. Find out how to use a HSI program to optimize total system performance, minimize total ownership costs, and ensure that your system is built and tested to accommodate the characteristics of your user population that will operate, maintain, and support it.

Who Should Take This Training: All designated TE&C personnel (i.e., personnel with TE&C as a Primary or Secondary Competency) and other personnel performing TE&C functions.

**TEMP Development and Test Plan Development Course**

Description: The purpose of this course is to obtain information on the SPAWAR approach to TEMP section development, and preferred test strategies and best practices for C4I and Information Technology systems, and individual Test Plans development in light of DON and DOD policy.

Who Should Take This Training: All designated TE&C personnel (i.e., personnel with TE&C as a Primary or Secondary Competency) and other personnel performing TE&C functions.

**Test Plan Development Class LANTSE-35940-26**

Description: The purpose of this course is to understand how to create a Test Plan using the Test Plan process. The student will also be able to identify the basic sections of the Test Plan Template, understand how to tailor the Test Plan template, and understand the Peer and supervisor/5.9 POC document review process in support of development of a test plan.

Who Should Take This Training: All designated TE&C personnel and other personnel performing TE&C functions.

**System Operational Verification Test (SOVT)**

Description: The purpose of this course is to understand the purpose of a System Operational Verification Test (SOVT). In addition, the student will understand when a SOVT is required, understand the difference between a System and Platform SOVT, understand how a SOVT is performed and know where you can get the resources required like templates, tools, database, and additional information

Who should take this training: TE&C personnel and engineers involved in SOVTs.

**Design of Experiments (DOE)**

Description: The purpose of this course is to provide background on DOE, hands-on experience, and use of statistical software package critical in DOE data collection and analysis. Course awards 35
Continuous Learning Points (CLPs). Participants will receive a certificate upon completion. Course will be hands-on and will cover the following areas:

a) The key terminology of DOE and various options to testing.
b) How to plan, conduct and analyze tests efficiently, using examples from military T&E and the students' own test experiences.
c) How to apply a disciplined approach to clearly define the true test objectives, measures of effectiveness (MOE)/performance (MOP), appropriate input factors that impact the MOEs/MOPs, and the recommended settings for these factors to effectively address the requirements. In class projects and exercises will reinforce learning objectives.

Who Should Take This Training: All designated TE&C personnel (i.e., personnel with TE&C as a Primary or Secondary Competency) and other personnel performing TE&C functions.

Reliability Growth

Description: This introductory course will cover concepts important to reliability, reliability estimation and reliability growth. The course starts with a background and overview of general reliability engineering principles, with some brief coverage of availability and maintainability and will cover the following areas:

a) Reliability policies and initiatives are presented along with the most relevant DoD standards and handbooks on reliability and reliability growth.
b) Other reliability areas of emphasis include reliability requirements planning, quantifying or estimating reliability, and design for reliability.
c) The course then transitions to reliability growth, where the 3 phases of planning, tracking and projection are introduced.

Who Should Take This Training: All designated TE&C personnel (i.e., personnel with TE&C as a Primary or Secondary Competency) and other personnel performing TE&C functions.
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Marine Corps Systems Command (MCSC) is the Commandant of the Marine Corps's agent for acquisition and sustainment of systems and equipment used to accomplish their warfighting mission. The command outfits United States Marines with literally everything they drive, shoot and wear. Their focus is the young Marine in harm's way, protecting him or her, and providing this warfighter the wherewithal to execute the mission. MCSC's team of professional civilian Marines and active duty Marines equips the warfighter to win. They listen, learn, research, develop, test, procure and sustain – whatever it takes to get Marines what they need, when they need it efficiently and for the best value possible.

For registration and availability of the course listed below, please contact Dave Havrin, MCSC DT&E Division, at dave.havrin@usmc.mil.

**Integrated Test Course**

Description: The purpose of this course is to employ best practices for integrated testing procedures. Throughout the course, students will learn why collaboration across the Triad is important to the Marine Corps, and how following an integrated, collaborate T&E process helps USMC. Trainees will learn how the T&E Working Integrated Project Team (WIPT) and the Capabilities Documentation Integrated Project Teams (IPT) improve inter-command communications. Additionally, trainees will be able to describe the process, roles, responsibilities, functions, and relationships of Triad commands involved in integrated T&E, and explain how T&E considerations affect capabilities development and material development.

Who Should Take This Training: T&E career field.

Additional Course Information: 1 day. 8 Continuous Learning points.

Location: MCSC, Quantico, VA
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The Navy’s Operational Test and Evaluation Force provides an independent and objective evaluation of the operational effectiveness and suitability of naval aviation, surface, subsurface, expeditionary, C4I, cryptologic, and space systems in support of DOD and Navy acquisition and fleet introduction decisions. COMOPTEVFOR requires that all testers (those who will be planning or conducting operational testing) complete at least the Level I DAU courses in the T&E career field.

Operational Test Director (OTD) Course

Description: This course is an introduction to DOD Acquisition and Navy Operational Testing, designed for new operational test directors who have recently reported from the Fleet to COMOPTEVFOR. These new testers have typically never been involved in acquisition or any kind of T&E, so this is their first learning opportunity. COMOPTEVFOR welcomes students from other commands and organizations, space permitting. A typical class includes a wide variety of students: new Navy and USMC test directors, contractors who support COMOPTEVFOR, personnel from program management and Navy labs, and personnel from other DOD agencies. Some attend to begin learning their new job; others attend to better understand COMOPTEVFOR and its processes. The course length is 3 days for students from other agencies, and 3 1/2 days for COMOPTEVFOR OTDs. The course covers the following: Navy Acquisition process, JCIDS documents, Operational Effectiveness and Suitability, the COMOPTEVFOR Framework Document, the TEM, basic cybersecurity testing, use of modeling and simulation in OT&E, COMOPTEVFOR policies, DOT&E oversight, Report-Writing, and how to obtain fleet resources and targets for testing. On the 4th day, COMOPTEVFOR OTDs receive additional instruction on Contract Support and Finance/Colors of Money.

Who Should Take This Training: New OTDs from COMOPTEVFOR, VX-1, VX-9, VMX-22, and HMX-1. Also, program management personnel, Navy lab personnel, and those needing to understand COMOPTEVFOR.

Additional Course Information: 23 hours for OTDs and 19 for other students. For registration and availability, please visit http://www.public.navy.mil/cotf/Pages/OTDMManual.aspx.

Location: COMOPTEVFOR, Norfolk, VA.

Prerequisites: None, although prior experience in T&E is a plus.

Integrated Evaluation Framework (IEF) Course

Description: This fast-paced 21/2-day course steps the student through the 12 steps of COMOPTEVFOR’s Mission-Based Test Design (MBTD) process, which is the foundation of all COMOPTEVFOR testing. The course is primarily intended to train COMOPTEVFOR testers and their support contractors, but others are welcome, space permitting. MBTD was first implemented at COMOPTEVFOR in 2005 and has become the only accepted approach to detailed planning for Integrated Testing (IT) and Operational Testing (OT) by COMOPTEVFOR. The product of MBTD is the Integrated Evaluation Framework document, which documents the results of the MBTD effort.
Who Should Take This Training: OTDs and OTCs from COMOPTEVFOR and its support squadrons, contractors who support COMOPTEVFOR, program management personnel and T&E WIPTs who need to understand the MBTD process, and others who are interested.

Additional Course Information: 14 hours for all students. For registration and availability, please visit http://www.public.navy.mil/cotf/Pages/ie.aspxLocation: COMOPTEVFOR, Norfolk, VA.

Prerequisites: None, although prior experience in T&E is recommended.

Test Planning Course

Description: This 2-day course is a series of lectures and exercises that familiarizes the student with COMOPTEVFOR’s process for creating a test plan in support of a particular phase of operational test. This process adds detail to the general plan created in the Framework document, and ensures the critical questions of who, what, when, where, and how are answered.

Who Should Take This Training: OTDs and OTCs from COMOPTEVFOR and its support squadrons. Others are welcome as space permits.

Additional Course Information: 12 hours for all students. For registration and availability, please visit http://www.public.navy.mil/cotf/Pages/testplan.aspx

Location: COMOPTEVFOR, Norfolk, VA.

Prerequisites: None, although OTD Course and IEF Course are recommended.

Post-Test Iterative Process Course

Description: This 2-day course discusses the detailed process by which OTDs and warfare divisions create an evaluation report upon return from test execution. Data scoring, data analysis, critical operational issue (COI) resolutions and other key considerations are discussed.

Who Should Take This Training: OTDs and OTCs from COMOPTEVFOR and its support squadrons. Others are welcome as space permits.

Additional Course Information: 15 hours for all students. For registration and availability, please visit http://www.public.navy.mil/cotf/Pages/postit.aspx

Location: COMOPTEVFOR, Norfolk, VA.

Prerequisites: None

Survey Course

Description: This 1-day course discusses the proper construction of COMOPTEVFOR surveys, which are often included in test plans. The student learns the attributes of a well-built survey, and also the pitfalls to avoid.

Who Should Take This Training: OTDs and OTCs from COMOPTEVFOR and its support squadrons. Others are welcome as space permits.
Additional Course Information: 7 hours for all students. For registration and availability, please visit http://www.public.navy.mil/cotf/Pages/survey.aspx

Location: COMOPTEVFOR, Norfolk, VA.

Prerequisites: None.
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The MCOTEA mission is to independently plan, execute, and evaluate testing of materiel solutions against approved warfighter capabilities/requirements under prescribed realistic conditions and doctrine, to determine operational effectiveness and suitability. MCOTEA’s highly trained, professional workforce is the voice for the Operating Force Marine, enabling informed decision making, and ensuring always that test reports accurately and objectively describe what is known and isn’t known about the Operational Effectiveness and Suitability of the material solution being evaluated. MCOTEA provides the training for their operational test workforce as described below in addition to DAU courses.

For registration and availability of T&E-related courses listed below, please contact Anthony Brooks at anthony.w.brooks@usmc.mil.

**MCOTEA 101**

Description: This 5-day course includes a collection of modules designed to provide each participant with a basic understanding of the MCOTEA process. Additionally, the modules contain elements of Program Management, OE/OS Evaluation Models, Design of Experiments, RAM Planning and Analysis, and other Analysis Methods. The course is primarily intended to train MCOTEA personnel, but others are welcome, space permitting. MCOTEA executes the course, at minimum, twice a year. Below is a list of the modules included in the MCOTEA 101 course.

- MCOTEA-TRNG-01062 MCOTEA Manual
- MCOTEA-TRNG-03063 System Evaluation Planning
- MCOTEA-TRNG-03064 Test Concept
- MCOTEA-TRNG-03065 Test Planning
- MCOTEA-TRNG-03066 Operational Test Execution
- MCOTEA-TRNG-03067 Operational Test Reporting
- MCOTEA-TRNG-03068 System Evaluation and Reporting
- MCOTEA-TRNG-03070 Cybersecurity Integration
- MCOTEA-TRNG-03073 Live Fire Integration
- MCOTEA-TRNG-03076 Multi-Service Operational Test and Evaluation
- MCOTEA-TRNG-03077 Modeling and Simulation Accreditation
- MCOTEA-TRNG-03081 Acquisition Category Designation

Who Should Take This Training: Operational testers involved with Marine Corps systems and acquisition programs, and other interested personnel involved in T&E.

Location: MCOTEA, Quantico Marine Corps Base, Quantico, VA

Prerequisites: None, although prior experience in T&E is a plus.
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The U.S. Army Test and Evaluation Command (ATEC) plans, conducts, and integrates developmental testing, independent operational testing, independent evaluations, assessments, and experiments in order to provide essential information to decision makers. ATEC was established by the Vice Chief of Staff with the primary function of ensuring that our Soldiers go to war with weapons that work. The Command has overall responsibility for all Army developmental and operational testing, operating from two fully integrated major subordinate commands: the U.S. Army Operational Test Command and the U.S. Army Evaluation Center, and has multiple test centers located across the United States.

For registration and availability of seats for the Army course listed below, please contact Robert Malone, 443-861-9766, robert.g.malone.civ@mail.mil.

**Test and Evaluation Basic Course (TEBC)**

Description: The CBT consists of eight modules addressing all aspects of T&E. Module 7 of the CBT is entitled "Probability and Statistics" and addresses aspects of experimental design.

Additional Course Information: The ATEC TEBC consists of Computer Based Training (CBT) and a Resident Seminar (RS). CBT takes approximately 40 hours to complete. RS is a 4.5 day class consisting of briefings, guest speakers (e.g., Deputy Under Secretary of the Army for Test & Evaluation, DOT&E, Commanding General, ATEC, and Technical Director, ATEC) and nine practical Exercises.

Course Length: CBT is 40 hours and the onsite RS is 4.5 days.

Location: Aberdeen Proving Grounds, MD or other location.
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DISA is a DOD agency that provides command and control capabilities, engineering, test and evaluation, and enterprise infrastructure to continuously operate and assure a global net-centric enterprise in direct support to joint warfighters, National level leaders, and other mission and coalition partners across the full spectrum of operations.

**Basic Information Technology T&E Methodologies Course**

Description: The purpose of this newly developed DISA course is to fill the Information Technology T&E gap in DAU T&E courses. The intent is to increase the technical skills of the DISA T&E workforce and provide a certification to document these skills. Other agency or Service T&E members may attend this course as seats are available. For the course, DISA contracted with the University of Memphis to develop a curriculum designed to enhance the skills of the Information Systems T&E workforce. Course content addresses topics on: systems and requirements testing, networks testing, Agile T&E, risk-based testing, test coverage and techniques, defect management, security testing, interoperability, test automation tools and certification exam.

Who Should Take This Training: DISA T&E Workforce personnel, Service T&E members.

Additional Course Information: Course quotas are tightly managed to provide training to the DISA workforce as a priority. Contact the DISA T&E POC to determine if course spaces are available for non-DISA personnel needing training on Information Systems T&E. Courses are typically held at Fort Meade, MD and Fort Huachuca, AZ on a rotating basis. For registration and availability, please contact Mr. Richard Harrison, DISA T&E, at richard.j.harrison18.civ@mail.mil.
The DON T&E Office, under the Deputy Assistant Secretary of the Navy for RDT&E (DASN(RDT&E)) and OPNAV N84C, has the mission to provide world class T&E tools, policy, best practices, adequately trained and sized workforce, and an available and capable infrastructure capability to ensure Navy and Marine Corps acquisition programs can perform T&E efforts effectively and efficiently. The DON Deputy for T&E has a dual reporting relationship under DON T&E Executive (N84) for acquisition program support.

**T&E Working Integrated Product Team (WIPT) Tutorial**

Description: Computer based training and presentation to provide T&E WIPT guidelines, lessons learned, best practices and approaches to enhance success in support of T&E planning and execution efforts for an acquisition program.

Who Should Take This Training: All personnel associated with and supporting a T&E WIPT.

Additional Course Information: 1 hour in length for 1 Continuous Learning Point. To access the training go to https://acc.dau.mil/CommunityBrowser.aspx?id=376281&lang=en-US and search for “WIPT”.

**DON T&E Course, “Strategies for Effective and Efficient T&E”**

Description: This course is structured to be a beyond-DAU course to provide development and training across DON for T&E Key Leadership Positions (KLPs)/Chief Developmental Testers (CDTs) for MDAPs/MAISs, Assistant Program Manager (APM) T&E, Program T&E Leads and Test Leads. It will provide workforce members with DON’s approach to T&E concepts, principles and best practices using a focus on TEMP development.

Who Should Take This Training: Personnel who are in a Program T&E KLP/CDT, APM (T&E) and T&E Lead position on acquisition programs and supporting roles at Warfare/System Centers, and other T&E workforce members as course openings allow.

Additional Course Information: Two day course offered at major SYSCOMs/PEOs and affiliated Warfare/System Center locations. 16 Continuous Learning Points. Courses are fielded at commands throughout the year. For registration and availability, please contact Mike Said, DASN (RDT&E), 571-256-7889, michael.o.said@navy.mil.

Prerequisites: T&E career field personnel (recommended).

**DON T&E KLP Qualification Board Training**

Description: Computer-based training about the T&E KLP Qualification Board (Q-Board) for DON T&E workforce personnel interested in applying for T&E KLP certification. This one hour presentation by the DON T&E Office provides the background, policy, qualifications and process information for the T&E KLP Q-Boards to certify Chief Developmental Testers (CDTs) (also called Assistant Program
Manager (APM) T&E leads) to enhanced the professionalism and qualifications of Program T&E Leads for ACAT I and IA programs.

Who Should Take This Training: Program Leads, T&E KLPs and those aspiring to be certified for the position.

Additional Course Information: Search the following link for the presentation and Q-Board forms http://www.secnav.navy.mil/rda/workforce/Pages/StrategyPolicy.aspx

For additional information please contact Mike Said, DASN (RDT&E), 571-256-7889, michael.o.said@navy.mil.

Prerequisites: None.
In this section, training courses offered by T&E professional associations and institutions of higher learning are provided.

Georgia Institute of Technology’s Professional Education Department offers numerous courses as well as a Test & Evaluation Certificate Program.

For more information on courses, cost, availability, and how to register please call Georgia Tech Global Learning Center at 855-812-5309 or visit http://www.pe.gatech.edu/.

**DEF 2504P Introduction to Intelligence, Surveillance, Reconnaissance (ISR) Concepts, Systems, and Test Evaluation**

Description: Gain an overview of Intelligence, Surveillance, Reconnaissance-enabling technologies, systems engineering and test and evaluation. Explore technical issues related to measures of performance, test planning, instrumentation and sensor/system functions. Examine challenges testing of network centric systems (and systems of systems), and review aspects of human factors impacting ISR system performance.

Who Should Take This Training: Engineers, technicians and managers.

**DEF 2703P Directed Infrared Countermeasures: Technology, Modeling, and Testing**

Description: The threat posed by infrared-guided missiles is increasingly important to the defense of the United States and other countries. Countermeasures to threat capability are required. Review the three-decade history of directed infrared countermeasures and threat operation. Focus on supporting technologies and examine current directed infrared countermeasures systems. Explore properties of high-power damage mechanisms and future trends in missile warning and laser resonator design.

Who Should Take This Training: Engineers, technicians and test & evaluation managers

Prerequisites: Recommended: DEF 2701P - Infrared Countermeasures.

**DEF 3535P Airborne EW System Integration**

Description: This three-day course covers the integration of various electronic warfare systems (radar warning receivers, jammers, decoys, missile warning sensors, other aircraft avionics systems), which is one of the most challenging problems faced by the EW community. It begins with an overview of computers, sensors and networks existing in everyday life and transitions easily understandable concepts to airborne integration approaches and lessons learned. The course also
provides linkage between varying disciplines in EW and provides a template useful for engineers working legacy EW system integration.

Who Should Take This Training: Junior through mid-level avionics or EW engineers and program managers seeking knowledge of EW System Integration, and individuals involved in IR/RF jammer, missile warning system, dispenser systems, data links and other avionics systems in need of integration

**DEF 4527P Human Systems Integration Test and Evaluation Methods**

Description: Discover how to plan and conduct a comprehensive test program for human systems integration. These activities include early-stage analytical evaluations, formative evaluations, and formal pass/fail tests. Learn how to test compliance with major human factors requirements documents and how to measure workload, situation awareness, and usability. Explore how to integrate HSI testing with the overall systems engineering test plan.

Who Should Take This Training: Department of Defense personnel working on an acquisition program and defense contractors responsible for human systems integration or human factors.

Prerequisites: Recommended: DEF 4504P - Human Systems Integration.

**DEF 4603P Fundamentals of Cyber Systems Test and Evaluation**

Description: Gain an overview of the cyber domain and how test and evaluation is used for cyber systems. The course includes the perspectives of the Department of Defense and industry test and evaluation practitioners, covering roles, responsibilities, processes, procedures and tools to work effectively in this space.

Who Should Take This Training: Engineers, technicians and managers who work with test and evaluation.

**DEF 5001P Test and Evaluation of RF Defense Electronic Systems**

Description: Review the requirements for testing defense-related radio frequency electronic systems (radar, electronic warfare, communications and RF-surveillance systems), beginning with a detailed discussion of test and evaluation as it pertains to DoD and U.S. government-systems acquisition processes. Explore laboratory and in-situ testing methods for components, subassemblies, subsystems and platform (ship, air, space and ground) level testing.

Who Should Take This Training: Managers, engineers and scientists who handle RF electronics systems.

**DEF 5003P Design of Experiments (DOE) I: Introduction to DOE**

Description: Design of Experiments (DOE) allows calculation of the equations that relate output(s) and the variability of output(s) to the input variable levels. Learn the techniques for planning studies in which the inputs to a system/process can be varied and the outputs observed. Explore efficient planning and analysis methods for determining which inputs have statistically significant effects on outputs and output variability, including analysis of variance, full and fractional factorial experiments, randomization, robust design and sensitivity analysis.

Who Should Take This Training: Engineers, technicians and managers who want to learn the techniques for designing experiments.
Prerequisites: Recommended: Working knowledge of probability and statistics.

**DEF 5004P Electronic Combat Flight Testing From a Systems Engineering Perspective**

Description: Discover how to best execute the test and evaluation of airborne electronic combat systems. Explore threats and EC defensive systems, the EC test process, test monitoring equipment and test facilities, the role of modeling and analysis and the effects of signature technology. Examine case studies for EC test programs.

Who Should Take This Training: Engineers, scientists, program managers and members of the testing community.

**DEF 5006P Scientific Principles of Test and Evaluation**

Description: Review the acquisition life cycle and developmental, operational, interoperability and live-fire testing. Covers the basics of modeling and simulation, including model construction, model taxonomy, simulation applications, availability of modeling and simulation (M&S) resources and verification, validation and accreditation. Explore the development of new applications to streamline the product development and test and evaluation processes, including Design of Experiments and other statistical tools, along with their effects on T&E and M&S and systems engineering.

Who Should Take This Training: Engineers, technicians and managers who handle modeling and simulation.

**DEF 5007P Design of Experiments (DOE) II: Applied DOE for Test and Evaluation**

Description: Study lessons and case studies of the application of Design of Experiments (DOE) in Test and Evaluation (T&E). Learn the perspectives of both statisticians and Department of Defense testers on how DOE can be effectively applied to test design and overall system evaluation. Begin with a basic overview of statistic principles and hypothesis testing, then concentrate on test designs, analyzing data from tests and how to handle difficulties that arise in test plans. Specific difficulties of interest will include limited live tests, combining live and virtual test data, working with very large test spaces and analyzing systems with discontinuous or nonlinear responses.

Who Should Take This Training: Engineers, scientists and managers who want to apply DOE to test design.

**DEF 5008P Fundamentals of Flight Test and Evaluation**

Description: The course provides individuals with knowledge required to plan, conduct and report on flight testing as outlined in DoD Directives. Test planning, formulating test objectives, understanding system parameters, test process, modeling and analysis, data collection and reduction, test logistics, test execution and reporting are described and specific examples are discussed. The course uses the case study method.

Who Should Take This Training: Engineers, program managers and aircrews who have responsibility for developing and conducting flight test activities.

**DEF 4604P Cyber Vulnerabilities and Embedded Systems**
Description: Understand the unique vulnerabilities of embedded systems that are commonly exploited to gain access to valuable data, alter device functionality, or impose other risks. This course focuses on methodologies for assessing risk, integrating defensive tools for mitigating risk and addressing future vulnerabilities throughout the product life cycle. Through hands-on labs, examine emerging threats and learn to think like a “hacker” to gain the skills necessary to create more secure products.

Who Should Take This Training: Product/process designers and engineers using embedded systems, information security professionals and application developers.

Additional Course Information: For more information or to register, visit pe.gatech.edu or contact Renita.Folds@gtri.gatech.edu or 404-407-7253.

DEF 4654P Development of Secure Embedded Systems

Description: Explore principles of secure embedded systems, analysis of threats, and development of security policies. Learn design methods that incorporate selection of architectural constructs, components, software processes, standards, and encryption.

Who Should Take This Training: Program managers, system engineers, software architects, and software developers of embedded systems.

Additional Course Information: For more information or to register, visit pe.gatech.edu or contact Renita.Folds@gtri.gatech.edu or 404-407-7253.

Digital Forensics Techniques for Weapons Systems

Description: Digital Forensics explores using freely redistributable, open source software tools to acquire data, extract evidence, and analyze evidence. This course focuses on analysis of PCs, though some discussion of other platforms is included.

Who Should Take This Training: Students already familiar with evidence acquisition and handling policy and technique but new to digital forensics will benefit the most. Additionally, law enforcement or commercial investigative organizations seeking to gain a digital forensics capability without paying license fees for the most common commercial software will find this course invaluable.

Additional Course Information: For more information or to register, visit pe.gatech.edu or contact Renita.Folds@gtri.gatech.edu or 404-407-7253.

DEF 2508P Introduction to Network-Centric Warfare Technologies

Description: The Department of Defense is moving toward Network-Centric Warfare (NCW) concepts and systems that support these concepts. Commercial technologies and systems developed for the military are being combined to provide connectivity at all levels of command and operational environments. Gain a practical introduction to command and control concepts, systems and test and evaluation. Develop an understanding of how technology fits within the network-centric command and control enterprise.

Who Should Take This Training: Engineers, technicians, managers.
DEF 4606P Introduction to Penetration Testing

Description: This lab-based course introduces the threat vectors and exploitation techniques used to penetrate systems and networks. These skills involve assessment, exploitation and remediation techniques that can help businesses to expose vulnerabilities early, implement remediation procedures and continually assess the effectiveness of security strategies with an ever-changing threat landscape.

Who Should Take This Training: Information security personnel tasked with the defense of critical systems, networks, and infrastructure, system administrators and advanced programmers, web developers, and database administrators. Intensive hands-on labs assume familiarity with basic command-line tools, Windows, and Linux.

Additional Course Information: For more information or to register, visit pe.gatech.edu or contact Renita.Folds@gtri.gatech.edu or 404-407-7253.

DEF 4601P Introduction to Malware Analysis

Description: This course will provide a foundational understanding of malicious software, how malware has shaped the global cyber security landscape and its future impact. Discussions and hands-on exercises will demonstrate malware analysis processes and their complexities as well as illustrate how to appropriately size, design and build an analytical capability best suited for your organization. Participants will prepare an analysis testbed and analyze multiple malware samples. Attendees will be encouraged to think like a Black Hat by exploring advanced techniques and tools, including data exfiltration and stealthy operation.

Who Should Take This Training: Information assurance officers (IAOs) and managers (IAMs), information security professionals charged with threat detection and incident response, and IT professionals seeking a greater understanding of potential malware threats and exploitation techniques.

Additional Course Information: For more information or to register, visit pe.gatech.edu or contact Renita.Folds@gtri.gatech.edu or 404-407-7253.

DEF 4607P Risk Management Framework for DoD

Description: This course introduces attendees to the Risk Management Framework (RMF) for Department of Defense (DoD) for Information Technology also known as RDIT which has been adopted as the common information security framework for federal government and government contractors. Informative lectures address transitions from DIACAP, threat processes, risk management concepts, and the roles defined by RDIT. The six-step life cycle process is explored through presentations and hands-on exercises as attendees learn to categorize information systems, select security controls, implement controls, assess controls, authorize information systems, and monitor the security controls.

Additional Course Information: For more information or to register, visit pe.gatech.edu or contact Renita.Folds@gtri.gatech.edu or 404-407-7253.

INTERNATIONAL TEST AND EVALUATION ASSOCIATION

For over thirty years the ITEA, a 501(c)(3) not-for-profit education organization, has been advancing the exchange of technical, programmatic, and acquisition information among the test and evaluation community. ITEA members come together to learn and share with others from industry, government, and academia, who are involved with the development and application of the policies and techniques used to assess effectiveness, reliability, interoperability, and safety of existing, legacy, and future technology-based weapon and non-weapon systems and products throughout their lifecycle.

For more information on the Professional Development Courses offered by ITEA go to www.ITEA.org, or email education@itea.org

Android Forensics and Security Training

Description: This course will cover the most common issues facing mobile devices, and general tips for securing mobile applications. Upon completion of general mobile security overview, the course will delve into a proven practice in Mobile Device Forensics and Mobile Application Penetration Testing for Android devices. Over the two-day course, students will get hands-on time with open-source and commercial forensics tools, setup and explore reverse engineering development environments, and experience the process with which professional mobile security engineers have successfully applied to several projects. Areas covered include, identifying application vulnerabilities, code analysis, memory & file system analysis, and insecure storage of sensitive data. Course Objectives include: 1. Extract and analyze data from an Android device; 2. Manipulate Android file systems and directory structures; 3. Understand techniques to bypass passcodes; 4. Utilize logical and physical data extraction techniques; 5. Reverse engineer Android applications; and 6. Analyze acquired data.

Who Should Take This Training: T&E Lead, T&E Engineer/Analyst, T&E Manager.

Prerequisites: Windows command line and Linux/UNIX terminal. Good to have development experience with Android and Eclipse.

Cybersecurity and Information Assurance

Description: This two-day course has been designed for the system engineer, program manager, and IA manager. This course is positioned as a mid-level introduction to cybersecurity and information assurance, and it covers a variety of topics in these areas. High-risk and labor-intensive processes such as security test & evaluation, and certification and accreditation procedures are covered in detail. IA risk management is covered across the spectrum of system, C&A, program protection and platform risks, illustrating a useful method of aggregation for comprehensive understanding of IA risk. The course concludes with a detailed exposition of secure network design and construction
principles and techniques that can be applied immediately to existing and new networks and systems. The course is fully updated with the latest information on the DoD's treatment of cybersecurity. This includes the new implementation of the Risk Management Framework (RMF), the replacement for DIACAP. The course will cover the new processes, the differences between new and old processes, and methods for accelerating both risk management and risk acceptance. We will use a detailed example to illustrate how to implement, monitor and test the methods, and we'll look at risk aggregation as an avenue to understand system of systems risk, collective (control) failure modes, and aggregated system accreditation.

Who Should Take This Training: T&E Lead, T&E Engineer/Analyst, T&E Manager.

**Fundamentals of T&E Processes**

Description: This three-day intensive course will describe the key principles of T&E as a critical part of systems engineering. The current world of T&E has evolved over the last 4 decades from a slogan mantra (“try before buy”) to a set of widely accepted principles and integrated practices. Industry and government experience has produced processes that now enable T&E to be a dependable indicator of progress towards achieving system performance objectives during a development program. The course will describe the procedures and tools that have emerged from U.S. military weapons acquisition programs and have been embraced by other government agencies. The instructors not only will focus on the application of this experience in the U.S. government programs, but also will describe how they are similarly applied in commercial programs and consumer product developments. Past course participants have included professionals from industry and from government, including the Departments of Defense, Energy, Homeland Security and Transportation. This course addresses the role of T&E in systems development, the determination of effective test requirements, integrating developmental and operational T&E, preparing a T&E master plan, coverage of T&E requirements in government contracts, and the role of modeling and simulation (M&S) in T&E.

Who Should Take This Training: T&E Lead, T&E Engineer/Analyst, T&E Manager.

**Scientific Test and Analysis Techniques (STAT), a.k.a. Operational DOE**

Description: This 5-day course will provide the practitioner with the ability to apply the best tools and methods from combinatorial testing and DOE. It will cover the key terminology of DOE and various options to testing, showing why DOE is the most effective and efficient testing approach. This course will cover the activities that must precede a DOE, including the first line of defense against variation and Measurement System Analysis (MSA). Testing strategies, such as screening, modeling, and confirmation, will be discussed along with how they fit into an integrated developmental and operational testing strategy. The 12-step approach to experimental design will be presented to provide a framework for adequately considering all aspects of the test. Basic graphical and statistical analysis of experimental data will be covered. The concept of and need for looking for variance shifting factors will be presented, along with screening designs. Response surface designs such as Box-Behnken and Central Composite Designs will be shown to be more efficient than factorial designs for modeling non-linear responses. Simple Rules of Thumb will be provided for sample size and design selection, along with determining significance and power. Interpreting regression output and the coding of factors and their levels, along with residual analysis, will facilitate the analysis of data not collected under a DOE strategy and provide a means
of analyzing data coming from multiple test scenarios. High Throughput Testing (HTT) will provide a
combinatorial testing approach that is extremely useful in operational testing when there are many
factors, both qualitative and quantitative, each with many levels. Latin Hypercube Sampling and
Descriptive Sampling will be shown to be very useful space-filling designs in high dimensions when
only a limited number of tests can be conducted. Nearly Orthogonal Latin Hypercube Designs will be
discussed and will provide the practitioner with power in screening many variables, such as is the
case when dealing with high fidelity simulation models from which low fidelity models can be
developed for prediction and risk assessment purposes. This course will cover many examples in the
world of test and evaluation and give the student practice at test design and analyzing test results. It
will provide the practitioner with the ability and rationale to make good decisions when conducting
both developmental and operational tests under a wide variety of circumstances. DOE will be shown
to be the science of data collection as it applies to testing and that it must be in the toolkit of every
tester. Includes the DOE PRO and SPC XL software packages, a course notebook, and the following
two textbooks: Understanding Industrial Designed Experiments and Design for Six Sigma: The Tool
Guide for Practitioners. HD Tools and rdExpert will be demo’d.

Who Should Take This Training:  T&E Lead, T&E Engineer/Analyst, T&E Manager.

What T&E’rs Need to Know about Program Management and Systems Engineering and Why

Description: Test and evaluation have too often and too long been perceived by many practitioners
of these disciplines as stand-alone processes. Nothing could be further from the truth, as they are
the foundations of developing the knowledge required to conduct effective and efficient program
management and systems engineering. Therefore, testers and evaluators must understand, speak
the language of, and properly integrate with the needs and processes of their major customers, the
program managers and systems engineers. This three-day course presents a basic overview of key
program management processes such as leadership, planning, monitoring, control, work breakdown
structure, scheduling, budgeting, contracting, and earned value management; and key systems
engineering processes such as requirements analysis, functional analysis, partitioning, design, risk
management, trade studies, and concurrent and specialty engineering. This course also includes
discussion of some developing engineering challenge areas such as software engineering and test,
human systems engineering, autonomous systems development, and cyber engineering and test. All
of the above subject areas are presented with a perspective that will help ensure that testers and
evaluators become better informed and more effective members of any development team.

Who Should Take This Training:  T&E Lead, T&E Engineer/Analyst, T&E Manager.

The Air Force Institute of Technology, or AFIT, is the Air Force’s graduate school of engineering and management
as well as its institution for technical professional continuing education. A component of Air University and Air
Education and Training Command, AFIT is committed to providing defense-focused graduate and professional
continuing education and research to sustain the technological supremacy of America’s air and space forces.
Test and Evaluation Certificate Program (TECP)

Description: TECP provides students a fundamental understanding in the basic concepts required for supporting analysis in the T&E Community. Particular emphasis is given to incorporating past, present, and future DOD T&E examples from all aspects of test (developmental, operational, etc.) into the curriculum to tailor the applications of the methodology and approaches within each course. Current T&E focus in Design of Experiments (DOE) and Reliability, Maintainability, and Availability analysis are addressed in required courses to complete the T&E Certificate Program. TECP targets individuals within the acquisition or analysis career fields working within research, developmental, or operational test stationed at engineering centers, test ranges, test centers, program offices or headquarters.

The TECP is designed to support part-time and full-time students. All students are expected to participate in the TECP via distance learning, however, not all students will have the opportunity to enroll in classes each quarter. Therefore, part-time students may have a quarter with no classes scheduled and will take longer to complete the certificate program. Full-time students will take classes each quarter until completing the full certificate requirements. Course delivery is via asynchronous video with weekly synchronous classes to be held throughout the quarter.

Who Should Take This Training: T&E Lead, T&E Engineer/Analyst, T&E Manager.

Additional Course Information:

STAT 583 Introduction to Probability and Statistics

Description: Basic concepts of probability and statistics with computer science applications are covered. Topics include permutations and combinations; random variables; probability distributions; estimation and confidence intervals; hypothesis testing.

Who Should Take This Training: T&E Lead, T&E Engineer/Analyst, T&E Manager.

Additional Course Information: 4 Credit Hours.

OPER 679 Empirical Modeling

Description: Analysis of experimental and observational data from engineering systems, focus on empirical model building using observation data for characterization, estimation, inference and prediction.

Who Should Take This Training: T&E Lead, T&E Engineer/Analyst, T&E Manager.

Additional Course Information: 3 Credit Hours.

OPER 688 Operational Experimentation
Description: As an introduction to designing experiments for operational testing and evaluation, this is an applied course intended for operations analysts who perform experiments or serve as advisors to experimentation. A statistical approach to the design and analysis of experiments is provided as a means to efficiently study and comprehend the underlying process of system being evaluated. Insight gained leads to improved system performance and quality.

Who Should Take This Training: T&E Lead, T&E Engineer/Analyst, T&E Manager.

Additional Course Information: 3 Credit Hours.

**LOGM 634 Reliability, Maintainability And Supportability**

Description: Creating and sustaining military capability is the purpose of military leadership and management. Reliability and Maintainability (R&M) are component characteristics which define the ability of a product to perform its specified functions throughout its operational life. Component R&M of the military system are primary determinants of military capability.

Who Should Take This Training: T&E Lead, T&E Engineer/Analyst, T&E Manager.

Additional Course Information: 3 Credit Hours.

**OPER 791 Capstone Research Project For Operational Sciences** (or course below)

Description: A research topic is selected from problems of interest to USAF and DoD. This topic is investigated by the student, and the findings, recommendations, and conclusions are presented as a graduate research paper under the supervision of an AFIT faculty member.

Who Should Take This Training: T&E Lead, T&E Engineer/Analyst, T&E Manager.

Additional Course Information: 3 Credit Hours.

**OPER 689 Advanced Statistical Methods For Test**

Description: This course provides advanced coverage in time series modeling, generalized linear models, and advanced experimental design. Examples and projects are focused on problems from the T&E enterprise.

Who Should Take This Training: T&E Lead, T&E Engineer/Analyst, T&E Manager.

Additional Course Information: 3 Credit Hours.

**SOT 210 Introduction to Experimental Design and Analysis**

Description: This course provides an introduction to the basic concepts of experimental design—a powerful methodology for planning, designing, executing, and analyzing tests throughout the lifecycle. Through numerous examples, the course illustrates the challenge of varying test conditions to explore the battlespace while controlling the risks of making incorrect fielding decisions, and provides general methods for determining the correct number of test runs to ensure sufficient statistical power and confidence in test results.

Who Should Take This Training: Managers and stakeholders.
**SOT 310 Experimental Design and Analysis I**

Description: This course provides the basic techniques and processes needed to create a statistically rigorous and defensible tests that can lead to reduced development lead time, greater insight into system performance, and to fielding better and more reliable systems. Students will learn how to plan, design, execute, and analyze efficient tests and a disciplined approach to associate test objectives with appropriate factors that affect measures of effectiveness/performance and the recommended settings for those factors to effectively span the battlespace.

Who Should Take This Training: T&E Lead, T&E Engineer/Analyst, T&E Manager.

Additional Course Information: Course length is 40 hours.

**SOT 410 Experimental Design and Analysis II**

Description: This course reinforces the fundamentals from Experimental Design and Analysis I and examines more closely design evaluation, new classes of designs, and advanced modeling and analysis methods. Design evaluation topics include power, sample size, optimality, and aliasing criteria.

Who Should Take This Training: T&E Lead, T&E Engineer/Analyst, T&E Manager.

Additional Course Information: Course length is 40 hours.

**WKS 410 Reliability and Reliability Growth**

Description: This course covers policies, guidance, and methods to improve reliability programs across the lifecycle. Focus is on both the proactive approach of designing reliability into the system up front (Design for Reliability) and the reactive reliability growth modeling.

Who Should Take This Training: T&E Lead, T&E Engineer/Analyst, T&E Manager.

Additional Course Information: Course length is 16 hours.

**WKS 411 Reliability and Reliability Growth Fundamentals**

Description: This course covers policies, guidance, and methods to improve reliability programs across the lifecycle. Focus is on both the proactive approach of designing reliability into the system up front (Design for Reliability) and the reactive reliability growth modeling.

Who Should Take This Training: T&E Lead, T&E Engineer/Analyst, T&E Manager.

Additional Course Information: Course length is 32 hours.
The purpose of DSIAC is to leverage expertise and knowledge from other Government agencies, research laboratories, industry, and academia to help solve the toughest scientific and technical problems of the Defense Systems community. DSIAC maintains a network of subject matter experts (SMEs) and access to the vast repository of DoD Scientific and Technical Information. The scope of DSIAC includes the following nine subject areas: Advanced Materials; Autonomous Systems; Directed Energy; Energetics; Military Sensing; Non-lethal Weapons; Reliability & Maintainability; Survivability and Vulnerability (LFT&E); and Weapon Systems. For more information on training go to: https://www.dsiac.org/resources/training

**Joint Aircraft Survivability Program Threat Weapons Effects (LFT&E)**

Description: This training is a collaborative effort between the Joint Combat Assessment Team (sponsored by the Joint Aircraft Survivability Program Office), and organizations from the intelligence and acquisition communities. The training draws information from threat exploitation, live fire testing, and combat experience to provide a complete picture on threat lethality. Hands-on experience is provided with threat munitions/missiles, test articles and damaged aircraft hardware. Experienced professionals provide current, relevant information on threat system upgrades, proliferation, and lethality.

Who Should Take This Training: Aviation operations personnel, intelligence professionals, weaponeering staff, individuals dealing with battle damage repair, testers, government and industry executives, survivability and LFT&E engineers, R&D professionals, and individuals with an interest in threat weapons, intelligence, LFT&E and aviation survivability.

Additional Course Information: This training is offered annually.

**Information Security**

**SEC301 Intro to Information Security**

Description: Jump-start your security knowledge by receiving insight and instruction from real-world security experts on critical introductory topics that are fundamental to information security. This completely revised five-day comprehensive course covers everything from core terminology to the basics of computer networks, security policies, incident response, passwords, and even an introduction to cryptographic principles.
Who Should Take This Training: People who are new to information security and in need of an introduction to the fundamentals of security.

Additional Course Information: Registration and additional course information is available at https://www.sans.org/.

Prerequisites: None

SEC401 Security Essentials Bootcamp Style

Description: Learn the most effective steps to prevent attacks and detect adversaries with actionable techniques that you can directly apply when you get back to work. Learn tips and tricks from the experts so that you can win the battle against the wide range of cyber adversaries that want to harm your environment.

Who Should Take This Training: Anyone who works in security, is interested in security, or has to understand security should take this course.

Additional Course Information: Registration and additional course information is available at https://www.sans.org/.

Prerequisites: SEC401 Security Essentials Bootcamp Style covers all of the core areas of security and assumes a basic understanding of technology, networks, and security. For those who are brand new to the field with no background knowledge, SEC301: Intro to Information Security would be the recommended starting point. While SEC301 is not a prerequisite, it will provide the introductory knowledge that will help maximize the experience with SEC401.

SEC501 Advanced Security Essentials Enterprise Defender

Description: Effective cybersecurity is more important than ever as attacks become stealthier, have a greater financial impact, and cause broad reputational damage. SEC501: Advanced Security Essentials - Enterprise Defender builds on a solid foundation of core policies and practices to enable security teams to defend their enterprise.

Who Should Take This Training: Incident response and penetration testers, security operations center engineers and analysts, network security professionals, or anyone who seeks technical in-depth knowledge about implementing comprehensive security solutions.

Additional Course Information: Registration and additional course information is available at https://www.sans.org/.

Prerequisites: While not required, it is recommended that students take SEC401: Security Essentials or have the skills taught in that class. This includes a detailed understanding of networks, protocols, and operating systems.

Penetration Testing

SEC504 Hacker Tools, Techniques, Exploits and Incident Handling

Description: By helping you understand attackers’ tactics and strategies in detail, giving you hands-on experience in finding vulnerabilities and discovering intrusions, and equipping you with a comprehensive incident handling plan, this course helps you turn the tables on computer attackers.
It addresses the latest cutting-edge insidious attack vectors, the "oldie-but-goodie" attacks that are still prevalent, and everything in between. Instead of merely teaching a few hack attack tricks, this course provides a time-tested, step-by-step process for responding to computer incidents, and a detailed description of how attackers undermine systems so you can prepare, detect, and respond to them.

Who Should Take This Training: Incident handlers, leaders of incident handling teams, system administrators who are on the front lines defending their systems and responding to attacks, and other security personnel who are first responders when systems come under attack.

Additional Course Information: Registration and additional course information is available at https://www.sans.org/.

Prerequisites: A foundational understanding of the Windows Command Line and core networking concepts such as TCP/IP.

SEC542 Web App Penetration Testing and Ethical Hacking

Description: Students will come to understand major web application flaws and their exploitation and, most importantly, learn a field-tested and repeatable process to consistently find these flaws and convey what they have learned to their organizations.

Who Should Take This Training: General security practitioners, penetration testers, ethical hackers, web application developers, and website designers and architects.

Additional Course Information: Registration and additional course information is available at https://www.sans.org/.

Prerequisites: SEC542 assumes students have a basic working knowledge of the Linux command line.

SEC560 Network Penetration Testing and Ethical Hacking

Description: With comprehensive coverage of tools, techniques, and methodologies for network penetration testing, SEC560 truly prepares you to conduct high-value penetration testing projects step-by-step and end-to-end.

Who Should Take This Training: Security personnel whose job involves assessing networks and systems to find and remEDIATE vulnerabilities, penetration testers, ethical hackers, defenders who want to better understand offensive methodologies, tools, and techniques, auditors who need to build deeper technical skills, red team members, blue team members, and forensics specialists who want to better understand offensive tactics.

Additional Course Information: Registration and additional course information is available at https://www.sans.org/.

Prerequisites: SANS Security 560 is the flagship penetration test course offered by the SANS Institute. Attendees are expected to have a working knowledge of TCP/IP, understand the differences between cryptographic routines such as DES, AES, and MD5, and have a basic knowledge of the Windows and Linux command lines before they step into class. While 560 is technically in-depth, it is important to note that programming knowledge is NOT required for the course.
**SEC561 Immersive Hands-On Hacking Techniques**

Description: The course teaches in-depth security capabilities through 80%+ hands-on exercises, maximizing keyboard time on in-class labs and making this SANS' most hands-on course ever. With over 30 hours of intense labs, students experience a leap in their capabilities, as they come out equipped with the practical skills needed to handle today's pen test and vulnerability assessment projects in enterprise environments.

Who Should Take This Training: Security professionals who want to expand their hands-on technical skills in new analysis areas such as packet analysis, digital forensics, vulnerability assessment, system hardening and penetration testing, systems and network administrators who want to gain hands-on experience in information security skills to become better administrators, incident response analysts who want to better understand system attack and defense techniques, forensic analysts who need to improve their skills through experience with real-world attacks, penetration testers seeking to gain practical hands-on experience for use in their own assessments, red team members who want to build their hands-on skills, and blue team members who want to better understand attacks and defend their environments.

Additional Course Information: Registration and additional course information is available at [https://www.sans.org/](https://www.sans.org/).

Prerequisites: To get the most out of this course, students should have some prior hands-on vulnerability assessment or penetration testing experience (minimum six months), or have taken at least one other penetration testing course (particularly SANS SEC560 or SEC542). The course will build on that background, helping participants ramp up their skills even further across a broad range of penetration testing disciplines.

**SEC562 CyberCity Hands-on Kinetic Cyber Range Exercise**

Description: Computers, networks, and programmable logic controllers operate most of the physical infrastructure of our modern world, ranging from electrical power grids, water systems, and traffic systems all the way down to HVAC systems and industrial automation. Increasingly, security professionals need the skills to assess and defend these important infrastructures. In this innovative and cutting-edge course based on the SANS CyberCity kinetic range, you will learn how to analyze and assess the security of control systems and related infrastructures, finding vulnerabilities that could result in significant kinetic impact.

Who Should Take This Training: Red & Blue team members, cyber warriors, incident handlers, penetration testers, ethical hackers, and other security personnel who are first responders when systems come under attack.

Additional Course Information: Registration and additional course information is available at [https://www.sans.org/](https://www.sans.org/).

Prerequisites: At least one of the following courses: 560, 561, 542, or 575.

**SEC573 Python for Penetration Testers**

Description: SEC573: Python for Penetration Testers will teach you the skills needed not only to tweak or customize tools, but to even develop your own tools from scratch. The course is designed to meet you at your current skill level and appeal to a wide variety of backgrounds. Whether you
have absolutely no coding experience or are a skilled Python developer looking to apply your coding skills to penetration testing, this course has something for you.

Who Should Take This Training: Security professionals who want to learn how to develop Python applications, penetration testers who want to move from being a consumer of security tools to being a creator and customizer of security tools, and technologists who need custom tools to test their infrastructure and want to create those tools themselves.

Additional Course Information: Registration and additional course information is available at https://www.sans.org/.

Prerequisites: A basic understanding of any programming or scripting language is highly recommended but not required for this class.

**SEC575 Mobile Device Security and Ethical Hacking**

Description: SEC575: Mobile Device Security and Ethical Hacking is designed to help organizations secure their mobile devices by equipping personnel with the knowledge to design, deploy, operate, and assess a well-managed and safe mobile environment. The course will help you build the critical skills to support your organization’s secure deployment and use of mobile phones and tablets. You will learn how to capture and evaluate mobile device network activity, disassemble and analyze mobile code, recognize weaknesses in common mobile applications, and conduct full-scale mobile penetration tests.

Who Should Take This Training: Penetration testers, ethical hackers, auditors who need to build deeper technical skills, security personnel whose job involves assessing, deploying or securing mobile phones and tablets, and network and system administrators supporting mobile phones and tablets.

Additional Course Information: Registration and additional course information is available at https://www.sans.org/.

Prerequisites: Students should have familiarity with network penetration testing concepts, such as those taught in SEC504 or SEC560.

**SEC617 Wireless Ethical Hacking, Penetration Testing, and Defenses**

Description: Using assessment and analysis techniques, this course will show you how to identify the threats that expose wireless technology and build on this knowledge to implement defensive techniques that can be used to protect wireless systems.

Who Should Take This Training: Ethical hackers and penetration testers, network security staff, network and system administrators, incident response teams, information security policy decision makers, technical auditors, information security consultants, wireless system engineers, and embedded wireless system developers.

Additional Course Information: Registration and additional course information is available at https://www.sans.org/.
**SEC642 Advanced Web App Penetration Testing and Ethical Hacking**

Description: This course is designed to teach you the advanced skills and techniques required to test web applications today. This advanced pen testing course uses a combination of lecture, real-world experiences, and hands-on exercises to educate you in the techniques used to test the security of enterprise applications. The final day of the course culminates in a Capture the Flag event, which tests the knowledge you will have acquired the previous five days.

Who Should Take This Training: Web penetration testers, security consultants, developers, QA testers, system administrators, IT managers, and system architects.

Additional Course Information: Registration and additional course information is available at [https://www.sans.org/](https://www.sans.org/).

Prerequisites: This course assumes that you have a solid understanding of web penetration techniques and methodologies. You should be familiar with the HTTP protocol, HTML, web applications, and a scripting language such as Python. Successful completion of the GWAPT certification or having attended the SEC542 class would fulfill these prerequisites.

**SEC660 Advanced Penetration Testing, Exploit Writing, and Ethical Hacking**

Description: SEC660: Advanced Penetration Testing, Exploit Writing, and Ethical Hacking is designed as a logical progression point for those who have completed SANS SEC560: Network Penetration Testing and Ethical Hacking, or for those with existing penetration testing experience. Students with the prerequisite knowledge to take this course will walk through dozens of real-world attacks used by the most seasoned penetration testers. The methodology of a given attack is discussed, followed by exercises in a hands-on lab to consolidate advanced concepts and facilitate the immediate application of techniques in the workplace.

Who Should Take This Training: Network and Systems Penetration Testers: SEC660 provides penetration testers with the training they need to perform advanced testing against known or unknown applications, services, and network systems. And the course gives students the expertise to perform complex attacks and develop their own exploits for existing and new frameworks. Incident Handlers: SEC660 gives incident handlers the knowledge they need to understand advanced threats, as handlers are often tasked with determining the threat level associated with an attack.

Additional Course Information: Registration and additional course information is available at [https://www.sans.org/](https://www.sans.org/).

Prerequisites: This is a fast-paced, advanced course that requires a strong desire to learn advanced penetration testing and custom exploitation techniques. The following SANS courses are recommended either prior to or as a companion to taking this course: SEC504: Hacker Tools, Techniques, Exploits, and Incident Handling, SEC560: Network Penetration Testing and Ethical Hacking, FOR610: Reverse-Engineering Malware: Malware Analysis Tools and Techniques. Experience with programming in any language is highly recommended. At a minimum, students are advised to read up on basic programming concepts. Python is the primary language used during class exercises, while programs written in C and C++ code are the primary languages being reversed and exploited. The basics of programming will not be covered in this course, although there is an introductory module on Python. You should also be well versed with the fundamentals of penetration testing prior to taking this course. Familiarity with Linux and Windows is mandatory. A solid understanding of TCP/IP and networking concepts is required. Please contact the author at stephen@deadlisting.com if you have any questions or concerns about the prerequisites.
**SEC760 Advanced Exploit Development for Penetration Testers**

Description: SANS SEC760: Advanced Exploit Development for Penetration Testers teaches the skills required to reverse-engineer 32-bit and 64-bit applications, perform remote user application and kernel debugging, analyze patches for 1-day exploits, and write complex exploit, such as use-after-free attacks against modern software and operating systems.

Who Should Take This Training: Senior Network and System Penetration Testers, Secure Application Developers (C and C++), Reverse-Engineering Professionals, Senior Incident Handlers, Senior Threat Analysts, Vulnerability Researchers, and Security Researchers.

Additional Course Information: Registration and additional course information is available at https://www.sans.org/.

Prerequisites: It is mandatory that students have previous exploit-writing experience using techniques such as those covered in SANS SEC660: Advanced Penetration Testing, Exploit Writing, and Ethical Hacking. This includes experience with stack-based buffer overflows on both Linux and Windows, as well as experience defeating modern exploit mitigation controls such as Data Execution Prevention (DEP), Address Space Layout Randomization (ASLR), canaries, and SafeSEH. Experience with or an understanding of fuzzing tools such as the Sulley Fuzzing Framework and Peach is required. Programming experience is important, preferably with C/C++. At a minimum, scripting experience in a language such as Python, Perl, Ruby, or LUA is mandatory. Programming fundamentals such as functions, pointers, calling conventions, structures, classes, etc. will be assumed knowledge. Experience with reverse-engineering vulnerable code is also required, as is the ability to read x86 disassembly from within a debugger or disassembler. Experience with both Linux and Windows navigation is required, as well as TCP/IP experience. If you do not meet these requirements you may not be able to keep up with the pace of the course.

**Cyber Defense**

**SEC502 Perimeter Protection In-Depth**

Description: There is no single fix for securing your network or perimeter. If asked, "How do you secure your perimeter?", people used to answer "A firewall!", but of course, that is not a valid answer today. The perimeter is so much more complex than it used to be. That is why this course is a comprehensive analysis of a wide breadth of technologies. In fact, this is probably the most diverse course in the SANS catalog, as mastery of multiple security techniques is required to defend your network from remote attacks. You cannot just focus on a single OS or security appliance. A proper security posture must be comprised of multiple layers. This course was developed to give you the knowledge and tools necessary at every layer to ensure your network is secure.

Who Should Take This Training: Information security officers, intrusion analysts, IT managers, network architects, network security engineers, network and system administrators, security managers, security analysts, security architects, security auditors.

Additional Course Information: Registration and additional course information is available at https://www.sans.org/.
**SEC503 Intrusion Detection In-Depth**

Description: SEC503: Intrusion Detection In-Depth delivers the technical knowledge, insight, and hands-on training you need to defend your network with confidence. You will learn about the underlying theory of TCP/IP and the most used application protocols, such as HTTP, so that you can intelligently examine network traffic for signs of an intrusion. You will get plenty of practice learning to configure and master different open-source tools like tcpdump, Wireshark, Snort, Bro, and many more.

Who Should Take This Training: Intrusion detection (all levels), network engineers /administrators, Hands-on security managers.

Additional Course Information: Registration and additional course information is available at [https://www.sans.org/](https://www.sans.org/).

Prerequisites: Students must have at least a working knowledge of TCP/IP and hexadecimal. Familiarity and comfort with the use of Linux commands such as cd, sudo, pwd, ls, more, less

**SEC505 Securing Windows with PowerShell and the Critical Security Controls**

Description: How can we defend against pass-the-hash attacks, administrator account compromise, and the lateral movement of hackers inside our networks? How do we actually implement the Critical Security Controls (CSC) on Windows in a large environment? We tackle these tough problems in SEC505: Securing Windows with PowerShell and the Critical Security Controls.

Who Should Take This Training: Anyone who wants to learn PowerShell, Windows security engineers and system administrators, anyone implementing the Critical Security Controls, those who must enforce security policies on Windows hosts, those deploying or managing a PKI or smart cards, anyone who needs to reduce APT malware infections.

Additional Course Information: Registration and additional course information is available at [https://www.sans.org/](https://www.sans.org/).

Prerequisites: There are no prerequisites to attend the course, but a familiarity with basic Windows and Active Directory concepts is presumed. You do not need any prior scripting experience, we will learn PowerShell as we go along together.

**SEC506 Securing Linux/Unix**

Description: SEC506: Securing Linux/Unix provides in-depth coverage of Linux and Unix security issues that includes specific configuration guidance and practical, real-world examples, tips, and tricks. We examine how to mitigate or eliminate general problems that apply to all Unix-like operating systems, including vulnerabilities in the password authentication system, file system, virtual memory system, and applications that commonly run on Linux and Unix.

Who Should Take This Training: Security professionals looking to learn the basics of securing Unix operating systems, experienced administrators looking for in-depth descriptions of attacks on Unix systems and how they can be prevented, administrators needing information on how to secure common Internet applications on the Unix platform, auditors, incident responders, and information security analysts who need greater visibility into Linux and Unix security tools, procedures, and best practices.
Additional Course Information: Registration and additional course information is available at https://www.sans.org/.

Prerequisites: Students must possess at least a working knowledge of Unix. Most students who attend this course have a minimum of 3-5 years of Unix system administration experience.

**SEC440 Critical Security Controls: Planning, Implementing and Auditing**

Description: This course helps you master specific, proven techniques and tools needed to implement and audit the Critical Security Controls as documented by the Center for Internet Security (CIS).

Who Should Take This Training: T&E Lead, T&E Engineer/Analyst, T&E Manager.

Additional Course Information: Registration and additional course information is available at https://www.sans.org/.

**SEC464 Cyber Security Training for IT Administrators**

Description: There are not enough well trained IT administrators and operations staff to meet the daily onslaught of cyber criminal and cyber terrorist activities. Sandia National Labs, NASA, and the State of Texas recently demonstrated that we can address this issue by leveraging the large number of IT admins within an organization to act as a hacker guard to help thwart many of these attacks. The goal is to have IT administrators in an organization serve as the first line of defense as human intrusion detectors.

Who Should Take This Training: IT administrators who interact on a regular basis with their security team or with an auditor, any IT operations staff or administrators who are curious about the things security teams require.

Additional Course Information: Registration and additional course information is available at https://www.sans.org/.

**SEC480 Top 4 Mitigation Strategies: Implementing & Auditing**

Description: After attending this hands-on course, individuals will be able to effectively implement and audit the Top 4 mitigation strategies in their own environments to achieve a significant level of security.

Who Should Take This Training: T&E Lead, T&E Engineer/Analyst, T&E Manager.

Additional Course Information: Registration and additional course information is available at https://www.sans.org/.

**SEC511 Continuous Monitoring and Security Operations**

Description: We continue to underestimate the tenacity of our adversaries! Organizations are investing a significant amount of time and financial and human resources trying to combat cyber threats and prevent cyber attacks, but despite this tremendous effort organizations are still getting compromised. The traditional perimeter-focused, prevention-dominant approach to security architecture has failed to prevent intrusions. No network is impenetrable, a reality that business executives and security professionals alike have to accept. Prevention is crucial, and we can’t lose
sight of it as the primary goal. However, a new proactive approach to security is needed to enhance the capabilities of organizations to detect threats that will inevitably slip through their defenses. SEC511: Continuous Monitoring and Security Operations will teach you how to strengthen your skills to undertake that proactive approach.

Who Should Take This Training: Security Architects, Senior Security Engineers, Technical Security Managers, SOC Analysts, SOC Engineers, SOC Managers, CND Analysts, and individuals working to implement Continuous Diagnostics and Mitigation (CDM), Continuous Security Monitoring (CSM), or Network Security Monitoring (NSM).

Additional Course Information: Registration and additional course information is available at https://www.sans.org/.

Prerequisites: Basic understanding of network protocols and devices, experience with Linux and Windows from the command line.

**SEC550 Active Defense, Offensive Countermeasures and Cyber Deception**

Description: SEC550: Active Defense, Offensive Countermeasures and Cyber Deception is based on the Active Defense Harbinger Distribution live Linux environment funded by the Defense Advanced Research Projects Agency (DARPA). This virtual machine is built from the ground up for defenders to quickly implement Active Defenses in their environments. The course is very heavy with hands-on activities - we won't just talk about Active Defenses, we will work through labs that will enable you to quickly and easily implement what you learn in your own working environment.

Who Should Take This Training: General security practitioners, penetration testers, ethical hackers, web application developers, and website designers and architects.

Additional Course Information: Registration and additional course information is available at https://www.sans.org/.

Prerequisites: Basic understanding of Windows and Linux Command line and basic TCP/IP understanding.

**SEC566 Implementing and Auditing the Critical Security Controls - In-Depth**

Description: Cybersecurity attacks are increasing and evolving so rapidly that it is more difficult than ever to prevent and defend against them. Does your organization have an effective method in place to detect, thwart, and monitor external and internal threats to prevent security breaches? This course helps you master specific, proven techniques and tools needed to implement and audit the Critical Security Controls as documented by the Center for Internet Security (CIS).

Who Should Take This Training: Information assurance auditors, system implementers or administrators, network security engineers, IT administrators, Department of Defense (DoD) personnel or contractors, federal agencies or clients, private sector organizations looking to improve information assurance processes and secure their systems, and security vendors and consulting groups looking to stay current with frameworks for information assurance.

Additional Course Information: Registration and additional course information is available at https://www.sans.org/.
MGT414 SANS Training Program for CISSP Certification

Description: SANS MGT414: SANS Training Program for CISSP® Certification is an accelerated review course that has been specifically updated to prepare you to pass the 2015 version of the CISSP® exam.

Who Should Take This Training: If you desire a CISSP®, or your job requires it, MGT414 is the training for you.

Additional Course Information: Registration and additional course information is available at [https://www.sans.org/](https://www.sans.org/).

Building More Survivable Defense Systems: A Short Course in Live Fire Test and Evaluation (LFT&E) and More Effective Weapons:

Description: Taught by a seasoned professional with up-to-date knowledge, this three-day intensive course consists of a multi-faceted look at the legislation, directives, requirements, preparation, and execution of Live Fire Testing, a statutory requirement for most major defense acquisition programs since 1987. Discussions cover the history of LFT&E legislation, the Joint Live Fire Program, LFT&E candidacy, and preparation of Live Fire Test Plans and Detailed Test Plans in the context of the Test and Evaluation Master Plans. Also covered is the role of modeling and simulation in LFT&E, including pretest predictions and test assessment. Congressional and DoD reporting requirements and the role of the LFT&E waiver from full-up system-level testing (including its purpose, implementation, and historical precedents) are discussed, as is the role of Battle Damage and Repair in LFT&E, test article realism, and LFT&E test facilities. Air, Land and Sea system vulnerability and lethality will be addressed and an 800 page book of Live Fire Lessons Learned will be provided as part of the course.

Who Should Take This Training: The course is designed to provide information regarding LFT&E requirements and conduct to military and civilian personnel involved in defense acquisition and program managers and contractors involved in weapon system design. The course will also benefit those conducting and overseeing T&E and funding of acquisition programs, as well as those assessing the vulnerability, lethality, and survivability of defense programs; executives, managers, and analysts responsible for T&E by government agencies; engineering centers, R&D labs; industry; academia; and test facility managers.

The DAU Center for Defense Acquisition Leadership provides a variety of valuable leadership resources. The content which has been selected by various defense acquisition leaders and experienced practitioners will help you strengthen and refresh your leadership knowledge and skills.

More information on the DAU Center for Defense Acquisition Leadership can be found at http://www.dau.mil/leadership/defau0lt.aspx.

**ACQ 404 Systems Acquisition Management Course**

Description: This course provides a senior level of understanding of the defense acquisition system, and an environment for candid and frank discussion of key processes, and current issues and initiatives, best practices and lessons learned, that is appropriate for senior decision makers. Distinguished Guest Conversationalists provide the executive participants a forum to discuss motivations, constraints, and the many varied perspectives of government and defense industry executives, the Congress, and the Government Accountability Office.

Who Should Take This Training: General Officer/Flag Officer/ Senior Executive Service members in Government (both DOD and Non DOD), and senior defense industry executives in key acquisition leadership positions.

Additional Course Information: This course is offered throughout the year as Resident Learning, and the course length is approximately 4.5 classroom days. 4.3 Continuous Education Units, 43 Continuous Learning Units, 0 Reservist Retirement Points.

Prerequisites: Recommended: PMT 401, Program Manager’s Course.

**ACQ 405 Executive Refresher Course**

Description: The Executive Refresher Course provides senior acquisition professionals, from all career fields, an update on DoD acquisition policy, processes, and lessons learned. The ultimate goal is for participants to synthesize classroom information and define their roles and responsibilities as acquisition leaders. Participants hone their expertise through the use of DoD, congressional, GAO, and Industry guest speaker led discussions on acquisition updates. Sessions also include specific career field updates provided by DAU instructors, in the areas such as financial management, systems engineering, contracting, logistics, and test and evaluation. Learners will also participate in specific group led discussions on contemporary management and leadership topics, such as partnering with industry, risk management, human capital management, earned value oversight, time management, and leading change.
Who Should Take This Training: This course is for DAWIA Level III certified members of all career fields who are (or have been selected for) 0-6, GS-15, or the industry equivalent who are working in DoD weapons systems or information systems acquisition. This course is not designed for individuals currently assigned as program managers for MDAP or MAIS programs.

Additional Course Information: This course is offered throughout the year as Resident Learning, and the course length is approximately 8.5 classroom days. 7.4 Continuous Education Units, 74 Continuous Learning Units, 0 Reservist Retirement Points.

Prerequisites: DAWIA Level III certified in an Acquisition Workforce career field.

**ACQ 450 Leading in the Acquisition Environment**

Description: This action-based learning course provides an overview of the competencies and skills needed to lead in an acquisition environment. Experiential activities include role playing, simulation, communication, and critical-thinking exercises; a leadership challenge; and completion of a 360° feedback instrument, and action plans related to the feedback. Participants will learn to apply strategies for leading up, down, and across in an acquisition organization.

Who Should Take This Training: This class is for civilians (GS 13-15) or equivalent and military (Military O4-O6) in supervisory positions, level III certified (any career field/path) and have at least 3 years of acquisition experience serving in a level III coded position. Industry and allied participants are eligible to attend and are encouraged to register on a space-available basis.

Additional Course Information: This course is offered throughout the year as Resident Learning, and the course length is approximately 4 classroom days. 2.6 Continuous Education Units, 26 Continuous Learning Units, 0 Reservist Retirement Points.

Prerequisites: DAWIA Level III certified in an Acquisition Workforce career field, At least 3 years of Level III experience.

**ACQ 451 Integrated Acquisition for Decision Makers**

Description: This participant-driven, action-based learning course exposes DoD acquisition workforce members to the multidisciplinary acquisition perspectives, integration challenges, and influencing strategies necessary for successful integrated acquisition decision making. Through facilitated discussions, simulations, exercises, case studies, and exposure to decision-making tools participants will formulate strategies that promote effective integration and collaboration for a current integration challenge. Participants will gain a wider view of the acquisition environment and their respective roles and responsibilities.

Who Should Take This Training: This class is for civilians (GS 13-15) or equivalent and military (Military O4-O6), level III certified (any career field/path) and have at least 3 years of acquisition experience serving in a level III coded position. Industry and allied participants are eligible to attend and are encouraged to register on a space-available basis.

Additional Course Information: This course is offered throughout the year as Resident Learning, and the course length is approximately 3.5 classroom days. 2.5 Continuous Education Units, 25 Continuous Learning Units, 0 Reservist Retirement Points.
Prerequisites: DAWIA Level I certified in an Acquisition Workforce career field, At least 3 years of Level III experience.

PMT 400 Program Manager’s Skills Course

Description: This course provides O-5/GS-14, Level III Program Management (PM) Career Field acquisition professionals with policy updates and best practices. Students receive policy updates in the areas of Requirements, Acquisition, Finance, and Technical Management. Through the examination of lessons learned and sharing of experiences, students develop a plan to implement change in their organization.

Who Should Take This Training: O-5/GS-14, Level-III PM Career Field, International and Industry professionals are eligible to attend on a space-available basis.

Additional Course Information: This course is offered throughout the year as Resident Learning, and the course length is approximately 9.5 classroom days. 7.7 Continuous Education Units, 77 Continuous Learning Units, 0 Reservist Retirement Points.

Prerequisites: PMT 352B, Program Management Office Course, Part B, Level III certification in program management.

PMT 401 Program Manager’s Course

Description: This course is designed to improve DoD acquisition outcomes by strengthening the analytical, critical thinking and decision-making skills of potential leaders of major defense acquisition programs and program support organizations. Applying the proven doctrine of “train as you fight” participants analyze acquisition case studies representing contemporary acquisition program challenges and dilemmas; apply a broad cross section of knowledge of the acquisition environment and experience; and deepen their understanding of acquisition principles and practices through peer and instructor mentoring and coaching. Speakers, team projects, media training, and leadership simulations round out and enrich the course.

Who Should Take This Training: Board–selected ACAT I or II program managers, Level III Program Management (PM) career field members who have demonstrated the potential to become major program or project managers. In addition, up to 20% of each offering may be reserved for other high-potential acquisition professionals certified at Level III in career fields other than PM.

Additional Course Information: This course is offered throughout the year as Resident Learning, and the course length is approximately 10 weeks (classroom). 47 Continuous Education Units, 470 Continuous Learning Units, 0 Reservist Retirement Points.

Prerequisites: PMT 352B, Program Management Office Course, Part B, DAWIA-certified Level III in Program Management, Minimum Grade Level: GS-14 or equivalent (Civilian); O-5 or selected for promotion to O-5 (Military).

PMT 402 Executive Program Manager’s Course

Description: Assignment-specific, four-week course to meet individual learning needs of newly-selected program executive officers (PEO), Deputy PEOs, ACAT I or II program managers (PM) and
deputy PMs. Led by senior OSD and industry guests or faculty, topical lessons discuss program governance, leadership, best practices, as well as updates on policy and statute across the acquisition specialty areas. Pre-course work by class members results in draft individual Learning Plans tailored their program or portfolio.

Who Should Take This Training: PEOs, deputy PEOs, ACAT I and II PMs and deputy PMs.

Additional Course Information: This course is offered throughout the year as Resident Learning, and the course length is approximately 20 class days preceded by an online workshop. 14.6 Continuous Education Units, 146 Continuous Learning Units, 0 Reservist Retirement Points.

Prerequisites: PMT 401, Program Manager’s Course, Certified DAWIA Level-III in the Program Management Career Field; AND Selected to serve as: a PEO or DPEO; or the PM or Deputy PM of an ACAT I or II program, preferably within six (6) months of assignment start; OR O-6 and GS-15 level portfolio manager.

DAU Harvard Business School (HBS)

HBS 409 Decision Making

Description: Effective business decisions is a process that requires time and input from many individuals throughout an organization. In this module you’ll learn to identify underlying issues related to a decision, generate multiple alternatives, evaluate those alternatives, and communicate and implement the decision.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

HBS 427 Meeting Management

Description: This module is a timesaving guide to planning and conducting meetings from start to finish. It includes preparation, keeping the meeting on track, and follow-up. It gives expert advice for dealing with problem behaviors exhibited by meeting participants.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

HBS 441 Team Management

Description: In this module you will learn about common problems that frequently throw a team off course and how to prevent them—or, if necessary, how to get a team back on track. Focus is essential to effective teamwork. Learn how to diagnose and overcome common problems - such as
poor communication and interpersonal conflict - that can impede team progress, learn to take corrective measures to remove team problems and improve team performance.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**HBS 301 Managing Difficult Conversations**

Description: The goal of this Continuous Learning Module is to immerse managers in dialogue-based situations that foster learning by doing where they make key decisions that drive the dialogue and ensuing results. The module helps managers identify and adjust thought patterns before approaching the difficult conversations that arise in business. The module provides firsthand experiences in a safe environment and gives managers the opportunity to use interactive tools and apply follow-up action plans.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 3 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

**HBS 302 Negotiating for Results**

Description: The goal of this Continuous Learning Module is to immerse managers in dialogue-based situations that foster learning by doing where they make key decisions that drive the dialogue and ensuing results. Your managers will learn how to avoid common traps and find common ground for opportunities. The interactive module helps managers prepare for and conduct effective negotiations that produce a winning edge for your organization. The interactive environment will enable managers to tap into expert insights, discover proven tactics, and sharpen their own skills for getting results when negotiating with others.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 3 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

**HBS 303 Leading Team with Emotional Intelligence**

Description: The goal of this Continuous Learning Module is to immerse managers in dialogue-based situations that foster learning by doing, where they make key decisions that drive the dialogue and ensuing results. The module puts the student into situations where they must be flexible with their own emotional intelligence skills to drive high team performance. Engaging interactive exercises reveal the secret behind exceptionally productive teams. The interactive environment will enable managers to tap into expert insights, discover proven tactics, and sharpen their own skills in the area of emotional intelligence.
Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 3 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

**HBS 304 Managing Difficult Conversations High Bandwidth**

Description: This Continuous Learning Module immerses managers in dialogue-based situations that foster learning by doing where they make key decisions that drive the dialogue and ensuing results. The module helps managers identify and adjust thought patterns before approaching the difficult conversations that arise in business. The module provides firsthand experiences in a safe environment and gives managers the opportunity to use interactive tools and apply follow-up action plans.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 3 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

**HBS 305 Negotiating for Results High Bandwidth**

Description: This Continuous Learning Module immerses managers in dialogue-based situations that foster learning by doing where they make key decisions that drive the dialogue and ensuing results. Your managers will learn how to avoid common traps and find common ground for opportunities. The interactive module helps managers prepare for and conduct effective negotiations that produce a winning edge for your organization. The interactive environment will enable managers to tap into expert insights, discover proven tactics, and sharpen their own skills for getting results when negotiating with others.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 3 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

**HBS 306 Leading Teams with Emotional Intelligence High Bandwidth**

Description: This Continuous Learning Module immerses managers in dialogue-based situations that foster learning by doing, where they make key decisions that drive the dialogue and ensuing results. The module puts the student into situations where they must be able to flex their own emotional intelligence skills to drive high team performance. Engaging interactive exercises reveal the secret behind exceptionally productive teams. The interactive environment will enable managers to tap into expert insights, discover proven tactics, and sharpen their own skills in the area of emotional intelligence.

Who Should Take This Training: All DoD acquisition workforce members.
Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 3 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

**HBS 309 Coaching For Results**

Description: In today's environment of changing technology and evolving organizations, coaching can have a strategic impact. It provides continuous learning and develops people to meet current and future needs. Coaching is an investment that you make in developing your key resource - people - for the long-term benefit of your organization.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

**HBS 310 Influencing and Motivating Others**

Description: Influencing and Motivating Others examines the principles underlying leaders' abilities to influence other people and to motivate their employees.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

**HBS 401 Budgeting**

Description: This module takes you step by step through the process of building better, more accurate budgets in less time. Learn how to create a budget that functions as a critical strategic tool as you explore the advantages and disadvantages of new techniques and approaches. Includes easy-to-use budget templates for fast implementation of concepts.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**HBS 402 Business Case Development**

Description: This module takes you step by step through the process of creating a soundly reasoned and compelling case for your new business initiatives. Addresses topics ranging from identifying business opportunities to measuring their success. Includes recommendations for assessing risk, weighing costs, developing an implementation plan, and communicating recommendations in a convincing manner.

Who Should Take This Training: All DoD acquisition workforce members.
Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**HBS 403 Business Plan Development**

Description: This module takes you step by step through the process of preparing an effective plan for a business proposal. The steps you will learn are applicable to launching a new internal product as well as seeking funding for a new start-up business.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**HBS 404 Career Management**

Description: This module teaches you how to develop a straightforward approach to managing your career or helping others manage theirs. Includes tools for matching your interests, values, and skills to the right job or development opportunity, with valuable advice on resources such as career counselors, mentors, networking, informational interviewing, and professional development reviews.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**HBS 405 Change Management**

Description: This module is a practical guide to implementing, managing, and communicating change in your organization. You will learn how to approach change with an open mind and use it as a stimulus to encourage new ideas and harness enthusiasm for further progress. This module includes steps to help your unit or organization become change-ready and planning tools to address resistance to change efforts.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**HBS 406 Coaching**

Description: Here students will learn how to get the best from their direct reports and, through coaching, help others master new skills. They will learn how to use a four-step process to facilitate the professional growth of those they’ve agreed to coach. Participants will discover how to strengthen their skills so they can be more effective coaches.
Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**HBS 407 Crisis Management**

Description: Every crisis is an opportunity to shine for managers who know what to do. In this module you’ll learn how to chart a course through crisis situations, from crisis plan development and contingency thinking to post-crisis management. Relevant for managers at all levels.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**HBS 408 Customer Focus**

Description: Customer Focus is a vital orientation tool with value for every employee. This module covers the critical components of servicing internal or external customers, with a compelling overview of the importance of customer service, its relationship to customer satisfaction, and its link to company profitability.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**HBS 409 Decision Making**

Description: Effective business decisions is a process that requires time and input from many individuals throughout an organization. In this module you’ll learn to identify underlying issues related to a decision, generate multiple alternatives, evaluate those alternatives, and communicate and implement the decision.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 3 Distance or Continuous Learning Points, and 1 Reservist Retirement Points.

**HBS 410 Delegating**

Description: In this module you’ll learn how to use proven tools for assessing any assignment, matching employee skills to tasks, selecting the right person, and supporting the delegation all the way through completion. It includes strategies for communicating the assignment, monitoring progress, and dealing with "reverse delegation."
Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**HBS 411 Developing Employees**

Description: In this module you’ll learn how to easily apply recommendations for addressing employees' developmental needs. This module includes strategies for maximizing return on management, growing competent employees, and keeping star performers motivated. It also addresses use of development planning to help team members improve individual performance, make the most of career opportunities, and maximize contributions to your organization's performance.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**HBS 412 Difficult Interactions**

Description: In this module you’ll learn how to discuss and resolve difficult interactions in the workplace -- whether they're with employees, peers, bosses, or even customers and suppliers. It includes tools and techniques to help you: decide which situations are worth resolving, find the source of the difficulty, productively discuss the emotions that difficult interactions can raise, and overcome barriers to action.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**HBS 413 Dismissing an Employee**

Description: Dismissing an employee is one of the most difficult, painful tasks a manager can face. In this topic, you'll learn how to effectively manage a dismissal -- including making key decisions before, during, and after the critical event. Handled skillfully, dismissing an employee can set your team -- and your company -- on a positive new path.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.
**HBS 414 Diversity**

Description: In this module you will learn how to manage diversity to extract maximum value from your employees' differences -- including how to recruit diverse talent, resolve diversity-related conflicts, and communicate with employees and customers from other cultures.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**HBS 415 Ethics at Work**

Description: In this module you will learn how to use a three-step framework to solve "right vs. right" ethical dilemmas and what you can do to foster a climate of integrity within your organization.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**HBS 416 Feedback Essentials**

Description: In this module you will learn how and when to use various types of feedback to maximize openness and encourage learning. Covers information on establishing a receptive work environment, giving effective feedback, receiving feedback openly, being patient with non-communicators, and managing barriers to feedback.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**HBS 417 Finance Essentials**

Description: This primer shows non-financial managers how their units fit into the company's overall financial picture. Includes easy-to-understand explanations of the income statement, balance sheet, and cash flow statement, plus practical advice for pulling together a department's budget and justifying an investment or expenditure.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.
**HBS 418 Global Collaborations**

Description: In this module you will learn how to manage a global collaboration - including how to negotiate, build trust, overcome language barriers, and navigate geographical as well as cultural challenges.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**HBS 419 Goal Setting**

Description: Is your work organized around clear and meaningful objectives? It will be once you've mastered these tools and techniques for establishing realistic goals, creating a task list, tracking milestones, and evaluating achievement.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**HBS 420 Hiring**

Description: In this module, you’ll learn techniques for finding, interviewing, and selecting top performers. It will cover information on screening résumés, checking references, asking effective questions, making the hiring decision, and extending the offer. It also includes tools for creating a job profile, preparing for an interview, and evaluating job candidates.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**HBS 421 Innovation and Creativity**

Description: In this module you learn how to stimulate creative thinking in an intellectually diverse workgroup. You’ll learn to assess and then tailor the physical and psychological environment to stimulate creative thought, and how to manage the process of innovation for maximum impact on your organization.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.
HBS 422 Innovation Implementation

Description: This module provides a framework for turning an innovative idea into reality. Innovation is not only about generating creative ideas. Innovation results when a creative idea is put to use. However, the implementation phase is where many good ideas fail. Learn how to implement an innovation, from crafting a vision statement to managing resistance.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

HBS 423 Laying Off Employees

Description: Implementing a layoff is one of the most difficult, painful tasks a manager can face. In this topic, you’ll learn how to effectively manage a layoff -- including making key decisions before, during and after the critical event. Handled skillfully, a layoff can set your team -- and your company -- on a positive new path.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

HBS 424 Leading and Motivating

Description: This module gives a synopsis of the essential tasks of leadership: setting direction, aligning people, and motivating others. You will learn how to recognize the skills and characteristics of effective leaders, create an inspiring vision, and energize people to support and work toward your goals.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

HBS 425 Managing Upward

Description: How well do you work with your supervisor? In this module you will gain insight into developing a mutually rewarding relationship, with skills for communicating and negotiating with your manager. You will learn tips on presenting problems or opportunities to your supervisor and accepting responsibility for your proposed actions.

Who Should Take This Training: All DoD acquisition workforce members.
Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**HBS 426 Marketing Essentials**

Description: Written especially for non-marketing managers, this module includes fundamentals that will help people throughout the organization better understand the importance of marketing and how it relates to them.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**HBS 427 Meeting Management**

Description: This module is a timesaving guide to planning and conducting meetings from start to finish. It includes preparation, keeping the meeting on track, and follow-up. It gives expert advice for dealing with problem behaviors exhibited by meeting participants.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**HBS 428 Negotiating**

Description: In this module you will learn about the negotiation process, when different types of negotiations are appropriate, essential negotiating strategies, and how to become an effective negotiator.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**HBS 429 New Manager Transitions**

Description: In this module you will learn what it means to be a manager, as well as how to navigate the complex and often stressful transition from individual contributor to a new manager.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.
HBS 430 Performance Appraisal

Description: In this module you will learn how to prepare for, conduct, and follow up on performance evaluations—in ways that link employee performance to your company’s and group’s goals.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

HBS 431 Performance Measurement

Description: This module provides a review of financial and non-financial measures used in all areas of organizational performance. It addresses both standalone measures (including ROI, EVA, and BET) and measurement frameworks such as dashboards, quality models, and the Balanced Scorecard. Included is a systematic process for tracking performance of initiatives that can generate improvements across the organization.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

HBS 432 Persuading Others

Description: In this module you’ll learn how to master the art and science behind successful persuasion -- and begin changing others’ attitudes, beliefs, or behavior to create win-win solutions. Formal authority no longer gets managers as far as it used to. To do their job -- accomplishing work through others -- managers must develop and use persuasion skills rather than simply issue orders.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

HBS 433 Presentation Skills

Description: Sound advice on preparing and delivering presentations that command attention, persuade, and inspire. Includes rehearsal techniques as well as tips for creating and using more effective visuals. Also addresses the importance of understanding your objectives and your audience to create a presentation with impact.

Who Should Take This Training: All DoD acquisition workforce members.
Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**HBS 434 Process Improvement**

Description: In this topic, you'll learn what business processes are; why improving them is essential; and how to carry out a business process improvement (BPI) initiative.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**HBS 435 Project Management**

Description: In this module, you'll learn the nuts and bolts of project management, including project planning, budgeting, team-building, execution, and risk analysis. You will also learn about useful tools and techniques such as GANTT and PERT charts, Work Breakdown Structure, and variance analysis.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**HBS 436 Retaining Employees**

Description: Why do employees stay with -- or leave -- their jobs? In this module, you'll learn strategies for attracting and keeping top performers, how to handle common obstacles to retention such as burnout and work/life imbalance, and how to develop programs that address the diverse needs and interests of your workforce.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**HBS 437 Strategic Thinking**

Description: In this module, you will learn practical advice for managers in charge of shaping and executing organizational strategy including tips for analyzing opportunities, challenges, and the potential consequences of high-level action plans. It addresses identification of broad patterns and trends, creative thinking, analysis of complex information, and prioritization of actions.

Who Should Take This Training: All DoD acquisition workforce members.
Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**HBS 438 Strategy Execution**

Description: Learn what strategy is, how senior management and units work together to develop strategy, and how units support a company’s strategy by developing and executing action plans for strategic initiatives.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**HBS 439 Stress Management**

Description: In this module you will learn practical, hands-on suggestions for managing workplace stress—from short-term "quick fixes" to long-term methods for both changing situations and changing how you respond to them.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**HBS 440 Team Leadership**

Description: In this module you will learn how to establish a team with the right mix of skills and personalities and create a culture that promotes collaborative work. Covers steps to leading an effective team and includes innovative, easy-to-implement self-evaluation tools.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**HBS 441 Team Management**

Description: In this module you will learn about common problems that frequently throw a team off course and how to prevent them—or, if necessary, how to get a team back on track.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.
**HBS 442 Time Management**

Description: This module will help you master effective time management techniques. In this module you will learn how to take control of your schedule and use your time wisely—by analyzing how you spend time, prioritizing your tasks, and avoiding common time wasters.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**HBS 443 Virtual Teams**

Description: In this module you will learn how to form a virtual team, assess technology and communication needs, keep virtual projects on track, and ensure that virtual teams produce high-quality work.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.

**HBS 444 Writing Skills**

Description: Learn how to put your readers' needs first to take the headache out of writing—and help extend your influence as a manager.

Who Should Take This Training: All DoD acquisition workforce members.

Additional Course Information: This online course is offered throughout the year as Continuous Learning, and the course length is approximately 2 hours. 0 Continuous Education Units, 2 Distance or Continuous Learning Points, and 0 Reservist Retirement Points.
FEDERAL LEADERSHIP DEVELOPMENT PROGRAMS

This section reflects select entries from the Federal Government Leadership Programs (FedLDP) catalogue hosted on the U.S. Office of Personnel Management website (http://www.opm.gov). These programs are offered by Federal departments and agencies to foster the development of leadership skills in their employees.

Additional program information can be found at https://www.opm.gov/services-for-agencies/federal-leadership-development-programs/.

**Department of Defense/Department of the Navy (DOD/Navy) - The Dwight D. Eisenhower School**

Description: A 10-month program to prepare civilians for positions of greatest responsibility in the DOD. The program, which is part of the Senior Service College, develops an understanding of complex policy and operational challenges, and increased knowledge of the national security mission.

Who Should Take This Training: GS 14-15.

**Department of Defense/Washington Headquarters Services (DOD/WHS) - APEX**

Description: A 2-week program offered each September and March focusing on SES responsibilities and performance, as defined by the Executive Core Qualifications (ECQs). The program assists participants with framing their responsibilities in light of DOD and component priorities. It offers a blend of briefings and question-and-answer sessions with senior ranking DOD civilian and military leaders focusing on the current issues facing the Department.

Who Should Take This Training: SES.

**Department of Labor (DOL) - Leading EDGE**

Description: Leading EDGE Program (Leading EDGE-Executives Driving Government Excellence), the government-wide senior executive leadership development program. The goals of the program are to prepare today’s Federal executives for the considerable challenges on the horizon and inspire a shared government-wide identity and vision.

Who Should Take This Training: SES.

**Department of the Interior/Federal Consulting Group (DOI/FCG) - Savvy Leader Practicum (SLP): A Breakthrough Approach to Increasing Federal Leader Effectiveness**

Description: The Savvy Leader Practicum (SLP) is an open-enrollment, inter-agency program offered by DOI’s Federal Consulting Group. Participants have reported that by the end of the program they are already more effective leaders: making better leadership decisions; being more successful in dealing with highly difficult leadership challenges; and more relaxed and less stressed/anxious back on the job on a day to day basis!
The Savvy Leader Practicum (SLP) uses a completely new approach to increasing leader effectiveness. It works on the premise that the perspective you hold on a situation has significantly more influence on your leader effectiveness than any other factor. Leaders that learn the secrets to actively managing their own perspective when under high stress or anxiety adapt quicker to difficult leader challenges, perform more effectively, and are seen as more successful leaders. Helping leaders to learn to actively manage their own perspective is the sole focus of the SLP. And as predicted, even though NO behavioral skills or competencies are taught in the SLP, participants report significant increases in leader effectiveness.

SLP participants meet for 60 hours of in-class and peer coaching time. Participants meet one week a month over four months. Each meeting week is 1.5 – 2.5 days long and includes a half-day peer coaching session and 1-2 days of in-class training.

Who Should Take This Training: All Leadership Levels.

Office of Personnel Management/Federal Executive Institute (OPM/FEI) - Leadership for a Democratic Society

Description: A 4-week program bringing together SES members and high-performing GS-15s together for courses that help executives develop broad corporate viewpoints, understand their constitutional roles, and enhance essential leadership competencies.

Who Should Take This Training: GS 15; SES.

Office of Personnel Management/Federal Executive Institute (OPM/FEI) - Management Development Centers

Description: Educational centers offering supervisors, managers, and executives learning experiences designed around the OPM leadership competencies by providing them with interagency residential training, customized courses, and consulting.

Who Should Take This Training: GS 9-15; SES.

Office of Personnel Management/Federal Executive Institute (OPM/FEI) – LEAD Certificate Program

Description: The LEAD Certificate Program empowers Federal leaders to take charge of their professional development by providing a clear path to leadership training that's right for them and their careers. The LEAD Certificate Program offers "must-have" leadership skills that help individuals fulfill their Individual Development Plan (IDP), putting them squarely on the path to career advancement. By training tomorrow's leaders today, the LEAD Certificate Program helps training officers, managers, and supervisors meet the challenge of succession management. At each certificate level, current and future Federal leaders assess their leadership effectiveness, gain core knowledge, and develop critical skills for leadership success, culminating with a certificate signed by the Director of OPM, formally recognizing the employee's achievement.

Who Should Take This Training: GS 9-SES.
Office of Personnel Management/Federal Executive Institute (OPM/FEI) – SES Briefings for New Executives

Description: A 2-day program offered twice a year for new members of the career SES and SES-equivalents by the Office of Personnel Management in conjunction with the White House Presidential Personnel Office for the benefit of all Federal agencies as part of OPM's government-wide executive onboarding framework. The program informs attendees of the president's vision and mission, key Executive Branch initiatives and priorities, and the relationship between agency activities and domestic and foreign policy issues.

Sessions provide an orientation to the enterprise SES environment and culture, along with opportunities for participants to build interagency understanding and networks across government. Speakers include a range of policymakers, current and former SES, and subject matter experts who provide practical advice and expand strategies and tools participants can use to address unique leadership challenges new SES leaders face.

Who Should Take This Training: SES and SES equivalents.
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The DOD Leadership and Development Training’s mission is to develop and coordinate policies and strategies, validate requirements, and provide resources that ensure the DOD provides training, education and operational experiences to develop leader competencies and enhance functional and technical capabilities in support of the DOD Mission.

**Executive Leadership Development Program**

Description: The Executive Leadership Development Program (ELDP) provides Department of Defense (DOD) and interagency personnel the opportunity to participate in an exceptional joint and enterprise-wide Civilian leadership training and development experience. The objective is to promote greater understanding of the overall Department of Defense mission and culture, provide hands-on leadership training that parallels selected military training and ensure cross-Component exposure. The program is offered annually, and provides a series of learning and training experiences that blend experiential and academic learning, with hands-on exercises focused on the role of the war fighter. Program activities are conducted both in the United States and overseas.

Who Should Take This Training: DOD Civilians, grades GS-12 to GS-14 or equivalent, in permanent appointments with a minimum of three (3) years of full-time DOD Civilian service.


**Defense Senior Leadership Development Program**

Description: Defense Senior Leadership Development Program (DSLDP) is the Department of Defense (DOD) program to develop senior civilian leaders to excel in the 21st Century joint, interagency and multi-national environment. This program supports the government-wide effort to foster interagency cooperation and information sharing by providing opportunities to understand and experience, firsthand, the issues and challenges facing leaders across DOD and the broader national security arena.

Who Should Take This Training: DOD Civilians, grades GS-14 to GS-15 or equivalent, in permanent appointments.


**Continuing Education for Senior Leaders**

Description: The CESL is conducted through blended learning - pre-course work and a 4.5-day resident course. The resident course consists of both small and large group activities. The course structure is a combination of guest speakers and interactive exercises on subjects like National Security Personnel Challenges, Strategic Thinking, Knowledge Management, and Cultural Well Being. Updates on DOD initiatives are also included in the program.
Who Should Take This Training: DOD Civilians, grades GS-14 to GS-15 or equivalent, in permanent appointments with a minimum of three years of full-time DOD Civilian service.

The Navy Executive Development Program (NEDP) comprises a continuum of executive education courses and workshops tailored for Navy senior leaders, ranging from Flag/SES to O-6/GS-15 and high-potential O-5s. The primary focus of the NEDP is to expand the strategic awareness and executive skills of senior leaders to enable them to operate more effectively in increasingly complex Navy and Joint environments.

**Navy Senior Leader Seminar**

Description: The Navy Senior Leader Seminar (NSLS) provides senior officers (0-6/0-5) and senior civilians (GS-15) with an intensive nine-day executive education program that introduces the latest "best practices" in strategic planning, goal setting, strategic communication, effects-based thinking, risk management, financial management, and innovation. The program is designed to provide participants with the knowledge and skills required to manage and lead effectively in complex organizations. Learning is enhanced by the use of case studies, small-team exercises, practical applications, seminar-style discussions, peer learning, and faculty presentations.

Who Should Take This Training: The NSLS is designed for Captains, high-potential Commanders, Fleet/Force Command Master Chiefs and GS-15-equivalent civilians. Participants are nominated by their TYCOMs and Community leadership.

Additional Course Information: [http://my.nps.edu/web/nedp/nsls](http://my.nps.edu/web/nedp/nsls).

**Strategic Communication Workshop**

Description: The Strategic Communication Workshop (SCW) is a hands-on, results-oriented workshop that assists commands in the development and implementation of strategic communication plans and processes. Teams should bring their command’s strategic plan and/or a command initiative that might benefit from a communication component. Naval Postgraduate School faculty use the latest research and lessons learned from industry and DoD to generate discussion. Each team is assigned a professional facilitator who will serve as a guide and provide feedback. Teams will be asked to conduct in-depth stakeholder analyses, assess communication risk as it relates to your organization’s goals, and develop communication metrics to track desired effects. Take-aways include an analysis of your command’s communication capabilities and a roadmap for strengthening communication as it relates to the successful achievement of your organization’s strategic initiatives.

Who Should Take This Training: Suggested workshop attendees are teams of 3-5 key organizational members led by a Flag Officer, SES, or O-6. Commands should send a diverse group -- seniority, functional areas, and others who are familiar with the initiative (e.g. Planners, IO, PAO, HR, IT, Policy, and/or Operations).

Additional Course Information: [http://my.nps.edu/web/nedp/scw](http://my.nps.edu/web/nedp/scw).
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