EWT 0210 – Strategic Air Defense Systems
Course Length: 5 days; Classification: Secret
This course covers the technical and operational characteristics of selected strategic semi-active (SA) and seeker-aided ground-guided (SAGG) surface-to-air missile (SAM) systems. Specific topics include an overview of the concept of SA and SAGG SAM systems; the engagement scenario; the system concept of operation; antenna; receiver; transmitter; and signal processing subsystems; and missile and command links. The course also covers the fundamentals of continuous-wave (CW); pulse-Doppler; and phased array radar theory; and receiver and signal processing architectures that facilitate their utilization. Student exercises are designed to reinforce key performance concepts and their application to EW T&E.

EWT 0211 – Modern Air Defense Systems
Course Length: 5 days; Classification: First day is collateral Secret; remaining 4 days are Top Secret/SCI
This course addresses the key components of modern air defense systems. The course covers the sensors; command; and control; and the weapons associated with these systems at an engineering level. The focus of this course is non-former Soviet Union countries.

EWT 0212 – Surveillance Radar
Course Length: 5 days; Classification: Top Secret/SCI
This course addresses selected threat air surveillance radars and their designs from an EW perspective at the engineering level. Topics include aspects of the surveillance radar equation; assessed radar design characteristics; key attributes which maximize mission performance; and their EW implications. The course also addresses the role of these radars in an integrated air defense system (AIDS) and the various electronic protection features implemented in these radars to preserve mission performance. A wide variety of systems are considered. An in-class case study is conducted to reinforce key concepts.

EWT 0220 – IR Directed Threat Systems
Course Length: 5 days; Classification: Secret
This course presents engineering-level details of 10 infrared (IR) man-portable air defense systems (MANPADS) considered as threats to U.S. aircraft and relevant to U.S. countermeasures (IRCM) T&E. Information presented about these systems is that which is considered most important from an EW system and their EW implications. Included in the course presentation are key threat system design and theory of operation attributes essential for the EW test engineer to understand to effectively plan and conduct IRCM T&E. The course begins with a generic overview of the components and design theories common to all MANPADS and their subsystems. Common attributes of concept of operation among the various MANPADS under study are also presented. IR phenomenology considerations important to threat systems countermeasures T&E are also discussed. A review of IRCM and IR counter-countermeasures (IRCCM) techniques is provided.

For more information, contact:
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EW & T&E University Program Information and Course List

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Electronic Warfare
Test and Evaluation University
Electronic Warfare Specialized Technical Training Services

Program Information and Course List
Courses in:
Electronic Warfare Fundamentals
Systems Under Test and Survivability
Threat Systems and Air Defense Principles
THE ELECTRONIC WARFARE TEST AND EVALUATION UNIVERSITY

The Electronic Warfare Test and Evaluation University (EWT & E) is part of the 412th Electronic Warfare Group (EWG) at Edwards Air Force Base, California.

The EWG provides an integrated set of training resources, test planning and analysis procedures, and knowledge bases to accelerate the proficiency of EW&E engineers, who range from recent college graduates to experienced engineers, and enables them to achieve a high level of performance excellence.

THE SPECIALIZED TECHNICAL TRAINING SERVICES PROGRAM

Under the Specialized Technical Training Services (STTS) Program, AMERICAN SYSTEMS assists the 412th EWG with the development, maintenance, and delivery of training courses; the operation of the EW T&E; and the integration of all elements of this program with other EW T&E activities, as required.

The STTS Program focuses on the long-term mission performance needs of 412th EWG EW&E personnel and is designed to help test engineers achieve the required understanding necessary for proficiency and excellence in their work as quickly as possible.

The STTS Program offers the following capabilities:

- Made-to-order and off-the-shelf EW&E training
- World-class, EW&E-experienced instructors
- Expertise in course development
- Online EW test reference development
- Computer-based training

OFF-THE-SHELF EW T&E COURSES

- **Electronic Warfare Fundamental Concepts (EWF)**
  - These courses provide a solid foundation in the basic concepts associated with modern EW systems. They are aimed at new engineers and practitioners new to the EW field, as well as providing additional training for experienced engineers.
  - **Course Length:** 4 days; **Classification:** Unclassified

- **Electronic Warfare Systems Under Test and Survivability (EWS)**
  - These courses focus on the systems under test, such as EW receivers, electronic countermeasures systems, towed decoys, expendable countermeasures, and lowobservable concepts.
  - **Course Length:** 4 days; **Classification:** Unclassified

- **Electronic Warfare Test and Evaluation (EWT)**
  - These courses provide practical insights about advanced topics in test methodology, data analysis, and evaluation considerations from an EW test perspective.
  - **Course Length:** 4 days; **Classification:** Secret

EW 0010 – Radar Fundamentals for EW&E Engineers

Course Length: 4 days; Classification: Undeclassified

Students learn about radar fundamentals from the perspective of the radar’s operators, developers, and designers. In addition to basics, such as wave propagation theory, EW systems such as radar warning receivers (RWR), self-protection jammers (SPJ), and towed decoys (TD) are introduced and used numerical examples to demonstrate the key elements of the radar range equation. The course enables students to become proficient in solving problems dealing with basic radar detection and tracking problems. Once the basic operational concepts for radars are mastered, students are exposed to an analysis of the interactions that take place between the radar and the primary classes of EW systems. Students examine the impact key concepts will have on EW systems.

EW 0020 – Introduction to Electronic Warfare

Course Length: 4 days; Classification: Secret or Undeclassified

This course provides an introduction to active and passive EW techniques against threat integrated air defense systems (IADS). The course provides students with an overview of radar and infrared systems and jamming, missile warning, communications, navigation, and intelligence (CN), and fundamental electronic countermeasure (ECM) principles. The course objective is to provide students with a basic understanding of EW concepts, supporting principles, and associated impact upon the various EW-related systems under test. The course uses a building-block approach, supplemented with real-world examples, discussions, and numerical examples to reinforce student comprehension of the essential subject matter associated with self-protection and support jamming.

EW 0040 – Graphical Analytical Concepts with MtStat

Course Length: 4 days; Classification: Undeclassified

This course is designed for EW&E engineers to review probability and statistic fundamentals. The course covers statistical concepts in a graphically intensive manner using the MtStat graphical and statistical package. This course covers the basic statistical terms and techniques and addresses statistical problem solving methodology by accessing appropriate tables and performing mathematical calculations. After students are fully aware of the proven operational concepts, instructors use software methods to obtain solutions faster and more efficiently. Classroom exercises are included throughout the course, allowing students a hands-on opportunity to obtain essential information.

EW 0110 – EW Receivers Systems T&E

Course Length: 4 days; Classification: Secret

This course examines the means used to interpret radio frequency emissions and discusses test procedures and resources applicable to EW receivers; radar warning receiver systems (RWR); and communications, navigation, and intelligence (CN) receivers. The course covers operational concepts, including lists of basic statistical terms and techniques and addresses statistical problem solving methodology by accessing appropriate tables and performing mathematical calculations. After students are fully aware of the proven operational concepts, instructors use software methods to obtain solutions faster and more efficiently. Classroom exercises are included throughout the course, allowing students a hands-on opportunity to obtain essential information.

EWS 0110 – Fundamentals of High Power Microwave T&E

Course Length: 4 days; Classification: First two days Unclassified, third and fourth days Secret

This course provides students with a technical background in the development, operation, and applications of high power microwave (HPM) weapons. The course begins with an overview of the technical sources and modulation techniques used to generate high power microwaves. As the course progresses, students learn the fundamental concepts that govern the propagation of HPM energy and its interaction with a target and apply these concepts to test and evaluation techniques.

EWS 0120 – Fundamentals of High Energy Lasers T&E

Course Length: 4 days; Classification: Unclassified

This course provides students with a technical background in the development, operation, and applications of high energy lasers (HEL) that are applicable to weapon systems employment. Beam generation, characteristics, control and propagation are discussed. The final topic in this course introduces countermeasures for HEL and HEL T&E techniques.

EWS 0210 – Fundamentals of Onboard ECM* T&E

Course Length: 4 days; Classification: Secret

This course provides an introduction to the fundamentals of onboard radio frequency (RF) electronic countermeasures (ECM), and introduces T&E considerations for onboard ECM systems. The course covers onboard self-protection ECM against target acquisition and target track radars for both generic and specific system examples. The goal is to provide students with a foundation from which they can ask the right questions when dealing with onboard ECM on the aircraft self-protection ECM system. The course uses a building-block approach supplemented with real-world examples, discussions, and classroom exercises to reinforce student comprehension of the essential subject matter associated with onboard ECM.

*ECM is also referred to as Electronic Attack (EA)

EWE 0110 – Data Analysis and Evaluation for EW T&E Engineers

Course Length: 3 days; Classification: Unclassified

This course uses a unique example-based framework for presenting various statistical and analytical techniques common in EW data analysis and evaluation. The course builds upon the testing concepts presented in the EWF 0020 course. The course teaches students how to use the principles presented in the Graphical Analytical Concepts with MtStat course. A typical radar warning receiver (RWR) test is used as the example that provides the opportunity to explore the problems and provide student evaluations. Discussions then move from defining and structuring test objectives to determining measures of performance or effectiveness and establishing evaluation and success criteria. The problem is then taken to different levels requiring testing using different facilities and test design constraints. The effects of sample size are investigated during each iteration. Classroom exercises reinforce key concepts, graphical and statistical methods are defined and provided to the students to apply to their individual test data sets. This allows students to receive actual hands-on experience in applying each of the statistical techniques addressed in the course.

EWE 0130 – Network Centric Warfare T&E

Course Length: 4 days; Classification: Top Secret/SCI; SAR

This course equips EW test engineers to understand the fundamentals of Network Centric Warfare (NCW) as applied in current and future systems under test (SUT) platforms. Emphasis is placed upon U.S. and potential foreign adversary NCW operational concepts and their interactions in an EW and Information Operations (IO) environment. The course begins with an overview of NCW, its fundamental concepts, historical background, and the system platforms and components involved. The “Nature” of NCW is then addressed whereby ground, air, sea, and space-related CASIR sensors, platforms, and data link assets integrate into the Global Information Grid (GIG) to facilitate warfare NCW combat operations. Actual DOD systems used to facilitate this are discussed. The “Warfare” aspect of NCW is then presented whereby integrated NCW battlepace activities both offensive and defensive combat objectives. Selected foreign threats to NCW capabilities are addressed, and aspects of foreign NCW and counter-NCW capabilities are considered. EW, Navigation Warfare, and Cyber Warfare concepts, offensive and defensive for both first- and adversary operations, are covered. NCW test capabilities and test considerations are also addressed.

EWE 0140 – Data Reduction in EW T&E

Course Length: 4 days; Classification: Unclassified/For Official Use Only

This course addresses how to perform data reduction in EW T&E. Data reduction and analysis methods and tools specific to the 412th Electronic Warfare Group will be covered in detail. Material presented revolves around the construction of several realistic synchronous data sets. These data sets will be derived from actual data obtained from tactical radar warning receiver (RWR) tests, compatible with Design of Experiments (DOE) test and analysis methods, as well as from data sets currently used as examples in the Video Review and Reference Signal Collection and analysis. Material consists of the following three major components: (1) data reduction of system under test (SUT) data, (2) data reduction of threat data, and (3) data reduction in combining threat and SUT data. Student classroom exercises will be incorporated throughout the course to reinforce key data reduction concepts.

EW 0110 – Command Guided SAM Systems

Course Length: 5 days; Classification: Secret

This course covers the technical and operational characteristics of three specific command guided surface-to-air (SAM) systems. Topics include an overview of the concept of command guided SAM systems; the engagement scenario; the system concept of operation; antenna, receiver, transponder, and weapon system interactions; and missile guidance links. Additionally, the course presents missile guidance law fundamentals and places those fundamentals into the context of electronic countermeasure (ECM) effectiveness T&E. The relationship between detailed system technical and performance characteristics and the test implications of system behavior are presented. Student exercises are designed to reinforce key performance concepts and their application to T&E. Students have the opportunity to tour selected command guided systems where they can get a first-hand look at operational systems, discuss class concepts with system engineers and operators, and reinforce their understanding of system T&E behavior.

EW 0111 – Tactical Land Based Defense Systems

Course Length: 5 days; Classification: Secret

This course covers the technical and operational characteristics of two tactical land based defense systems: a surface-to-air missile (SAM) system associated with associated radars, as well as one radar-directed anti-aircraft artillery (AAA) system. The tactical employment of each system is also addressed. Included is an overview of the SAM battery components, processor, antiradiation radars, target engagement radars, and missile transporter erector launcher. The transmitter, receiver, signal processing, antenna, data link, and missile seeker processors are discussed. Additionally, the course presents missile guidance law fundamentals and places those fundamentals into the context of electronic countermeasure (ECM) effectiveness T&E for this class of system. Potential foreign adversaries are discussed. Principles of gun directing radars, including ballistic computations, are studied. Student exercises are designed to reinforce key performance concepts and their application to EW T&E. Students will have the opportunity to tour selected radar systems where they can see systems in operation, discuss class concepts with system engineers and operators, and reinforce their understanding of system T&E behavior.

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**“KNOW YOUR ENEMIES. KNOW YOURSELF. THEN YOU ARE INVICTA.” — SUN TZU**
THE ELECTRONIC WARFARE TEST AND EVALUATION UNIVERSITY

The Electronic Warfare Test and Evaluation University (EW T&E U) is part of the 412th Electronic Warfare Group (EWG) at Edwards Air Force Base, California.

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THE SPECIALIZED TECHNICAL TRAINING SERVICES PROGRAM

Under the Specialized Technical Training Services (STTS), AMERICAN SYSTEMS assists the 412th EWG with the development, maintenance, and delivery of training courses; the operation of the EW T&E U; and the integration of all elements of this program with other EW T&E U activities, as required.

The STTS Program focuses on the long-term mission performance needs of 412th EWG EW T&E personnel and is designed to help test engineers achieve the required understanding necessary for proficiency and excellence in their work as quickly as possible.

The STTS Program offers the following capabilities:
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- World-class, EW-T&E-experienced instructors and subject matter experts
- On-demand training development
- Online EW test reference development
- Computer-based training

OFF-THE-SHELF EW T&E COURSES

Electronic Warfare Fundamental Concepts (EWF)

These courses provide a solid foundation in the basic concepts associated with testing EW systems. The courses are aimed at new engineers and practicing engineers new to the EW test field, as well as providing good refresher training for experienced engineers.

Electronic Warfare Systems Under Test and Survivability (EWS)

These courses focus on the systems under test, such as EW receivers, electronic countermeasures (ECM) systems, low detectability, and survivability concepts, as well as system-level survivability measures.

Electronic Warfare Evaluation (EWE)

These courses provide practical insights about advanced topics in test methodology, data analysis, and evaluation considerations from an EW test perspective.

Electronic Warfare Threat Systems and Air Defense Principles (EWTSADP)

EW systems are designed to operate in and overcome enemy integrated air defense systems (IADS). The focus of these courses is to provide engineers and analysts with an understanding of the operating principles of the individual threat systems and how they are related together to form an IADS.

EWF 0010 – Radar Fundamentals for EW T&E Engineers

Course Length: 4 days; Classification: Unclassified

Students learn about radar fundamentals from the perspective of the radars’ operating principles and their impact on EW systems. In addition to basics, antenna radiation patterns, 4 different types of EW systems such as radar warning receivers (RWR), self-protection jammers (SPJ), and towed decoys (TD), this fundamental course describes basic radar operation, and uses numerical examples to demonstrate the key elements of the radar range equation. The course enables students to become proficient in solving problems dealing with basic radar detection and range equation. Once the basic operational concepts for radars are mastered, students are exposed to an analysis of the interactions that take place between the radar and the primary classes of EW systems. Students examine this key course will:

- Understand the electromagnetic range equation
- Learn about the principles of radar range equation
- Learn how to analyze radar jamming

EWF 0020 – Introduction to Electronic Warfare

Course Length: 4 days; Classification: Secret or Unclassified

This course provides an introduction to active and passive EW techniques against threat integrated air defense systems (IADS). The course provides students with an overview of radar and infrared systems and jamming; missile warning; communications, navigation, and intelligence (CNI); and fundamental electronic countermeasures (ECM) principles. The course objective is to provide students with the basic principles of EW concepts, supporting principles, and associated impact upon the various EW-related systems under test. The course uses a building-block approach, supplemented with real-world examples, discussions, and numerical examples to reinforce student comprehension of the essential subject matter associated with self-protection and support jamming.

EWF 0040 – Graphical Analytical Concepts with MiStat

Course Length: 4 days; Classification: Unclassified

This course is a refresher course designed for engineers to review probability and statistical fundamentals. The course covers statistical concepts in a graphically intensive manner using the MiStat graphical and statistical package. This course covers key statistical concepts and how to address statistical problem solving methodology by accessing appropriate tables and performing mathematical calculations. After students are fully aware of the proven, operational concepts, the instructor introduces student software methods to obtain solutions faster and more efficiently. Classroom exercises are included throughout the course, allowing students a hands-on opportunity to obtain essential information.

EWF 0110 – EW Receivers Systems T&E

Course Length: 4 days; Classification: Unclassified

This course examines the means used to intercept radio frequency emissions and discusses test procedures and resources applicable to EW receivers; radar warning receiver systems (RWR); and communications, navigation, and identification (CNI) receivers. It provides a historical, technical and operational characteristics of receivers and associated systems, with specific emphasis on RWRs from the perspective of T&E practitioners. The course provides an overview of test for EW receivers; the basic statistical methods and associated radars, as well as one radar-directed anti-aircraft artillery (AAA) system. The tactical employment of each system is also addressed. Included is an overview of the SAM battery components, ECM, associated radars, target engagement radars, and missile transporter erector launcher. The transmitter, receiver, signal processing, antenna, data link, and missile seeker functions are also discussed. Additional courses present missile guidance law fundamentals and places those fundamentals into the context of electronic countermeasure (ECM) effectiveness T&E. The relationship between detailed systems technical and performance characteristics and the test implications of system behavior are provided. Students exercises are designed to reinforce key performance consequences and their application to T&E. Students have the opportunity to tour selected command guided systems where they can get a first-hand look at operational systems, discuss class concepts with system engineers and operators, and reinforce their understanding of system T&E behavior.

EWF 0111 – Radar Systems T&E

Course Length: 4 days; Classification: Secret

The course focuses on the historical, technical and performance characteristics of radar systems. The course covers the technical and operational characteristics of radars, and their application to EW T&E. Students will have the opportunity to tour selected command guided systems where they can get a first-hand look at operational systems, discuss class concepts with system engineers and operators, and reinforce their understanding of system T&E behavior.

EWE 0010 – Data Analysis and Evaluation for EW T&E Engineers

Course Length: 3 days; Classification: Unclassified

This course uses a unique example-based framework for presenting various statistical and analytical techniques common in EW data analysis and evaluation. The course builds upon the testing concepts presented in the EWE 0100 – EW Test Reference Development T&E course and is presented in the Graphical Analytical Concepts with MiStat course. A typical radar warning receiver (RWR) test is used as the example that provides the exercises to explore problems and provide subsequent evaluations. Discussions then move from defining and structuring test objectives to determining measures of performance or effectiveness and establishing evaluation and success criteria. The problem is then taken to different levels requiring testing using different facilities and test design constraints. The effects of sample size are investigated during each iteration, and students practice exercises, graphical and statistical methods are defined and provided to the students to apply to their individual test data sets. Students achieve the ability to interpret data, and perform independent analysis using the techniques presented in the course.

EWE 0120 – Data Reduction in EW T&E

Course Length: 4 days; Classification: Unclassified

This course is intended as an introduction to the characteristics and functionality of high energy lasers (HEL) that are applicable to weapon systems employment. Beam generation, characteristics, control and propagation are discussed. The final topic in this course introduces countermeasures for HEL weapons and HET T&E techniques.

EWS 0210 – Fundamentals of Onboard ECM T&E

Course Length: 4 days; Classification: Secret

This course is a refresher course in the fundamentals of onboard radio frequency (RF) electronic countermeasures (ECM) and introduces T&E considerations for onboard ECM systems. The course covers onboard self-protection against target acquisition and target track radars ECM for both generic and specific system examples. The goal is to provide students with a foundation from which they can ask the right questions when dealing with onboard T&E activities of self-protection ECM systems. The course includes a building-block approach supplemented with real-world examples, discussions, and classroom exercises to reinforce student comprehension of the essential subject matter associated with onboard ECM.

The Electronic Warfare Test and Evaluation University (EW T&E U) is part of the 412th Electronic Warfare Group (EWG) at Edwards Air Force Base, California.

EWT 0111 – Tactical Land Based Defense Systems

Course Length: 5 days; Classification: Secret

This course covers the technical and operational characteristics of two tactical land-based defense systems: Point Defense (PDS) and Air & Missile Defense (AM&AD) systems. Topics include an overview of the concept of command guided systems; the engagement scenario; the system concept of operation; antenna, receiver, transmitter, processor, and missile control links. Additionally, the course presents missile guidance law fundamentals and places those fundamentals into the context of electronic countermeasure (ECM) effectiveness T&E. The relationship between detailed systems technical and performance characteristics and the test implications of system behavior are provided. Students exercises are designed to reinforce key performance consequences and their application to T&E. Students have the opportunity to tour selected command guided systems where they can get a first-hand look at operational systems, discuss class concepts with system engineers and operators, and reinforce their understanding of system T&E behavior.

EWE 0140 – Data Reduction in EW T&E

Course Length: 4 days; Classification: Unclassified

This course addresses how to perform data reduction in EW T&E. Data reduction techniques and methods specific to the 412th Electronic Warfare Group will be covered in detail. Material presented revolves around the construction of several realistic synchronous threat data sets. These data sets will be derived from actual data obtained from typical radar warning receiver (RWR) tests, complete with Design of Experiments (DOE) test and analysis methods, as well as from data sets currently used as examples in the Video Review course. These data sets consist of the following three major components: (1) data reduction of system under test (SUT) data, (2) data reduction of threat data, and (3) data reduction in combining threat and SUT data. Student classroom exercises will be incorporated throughout the course to reinforce key data reduction concepts.

EWT 0110 – Command Guided SAM Systems

Course Length: 5 days; Classification: Secret

This course covers the technical and operational characteristics of three specific command guided surface-to-air missile (SAM) systems. Topics include an overview of the concept of command guided systems; the engagement scenario; the system concept of operation; antenna, receiver, transmitter, processor, and missile control links. Additionally, the course presents missile guidance law fundamentals and places those fundamentals into the context of electronic countermeasure (ECM) effectiveness T&E. The relationship between detailed systems technical and performance characteristics and the test implications of system behavior are provided. Students exercises are designed to reinforce key performance consequences and their application to T&E. Students have the opportunity to tour selected command guided systems where they can get a first-hand look at operational systems, discuss class concepts with system engineers and operators, and reinforce their understanding of system T&E behavior.

EWF 0120 – Fundamentals of High Energy Lasers T&E

Course Length: 4 days; Classification: Unclassified

This course provides students with a technical background in the development, operation, and applications of high power microwave (HPM) weapons. The course begins by reviewing the history, development, sources and modulation techniques used to generate high power microwaves. As the course progresses, students learn the fundamental concepts that govern the propagation of HPM energy and its interaction with a target and apply these concepts to test and evaluation techniques.

EWT 0110 – Tactical Land Based Defense Systems

Course Length: 5 days; Classification: Secret

This course covers the technical and operational characteristics of two tactical land-based defense systems: Point Defense (PDS) and Air & Missile Defense (AM&AD) systems. Topics include an overview of the concept of command guided systems; the engagement scenario; the system concept of operation; antenna, receiver, transmitter, processor, and missile control links. Additionally, the course presents missile guidance law fundamentals and places those fundamentals into the context of electronic countermeasure (ECM) effectiveness T&E. The relationship between detailed systems technical and performance characteristics and the test implications of system behavior are provided. Students exercises are designed to reinforce key performance consequences and their application to T&E. Students have the opportunity to tour selected command guided systems where they can get a first-hand look at operational systems, discuss class concepts with system engineers and operators, and reinforce their understanding of system T&E behavior.

HELMET

"KNOW YOUR ENEMIES. KNOW YOURSELF. KNOW SUN TZU."

SUN TZU.
“TRAIN TODAY, PREPARED TOMORROW!”

**EWT 0210 – Strategic Air Defense Systems**
Course Length: 5 days; Classification: Secret

This course covers the technical and operational characteristics of selected strategic semi-active (SA) and seeker-aided ground-guided (SAGG) surface-to-air missile (SAM) systems. Specific topics include an overview of the concept of SA and SAGG SAM systems, the engagement scenario, the system concept of operation, antenna, receiver, transmitter, and signal processing subsystems, and missile and command links. The course also covers the fundamentals of continuous-wave (CW), pulse-Doppler, and phased array radar theory, and receiver and signal processing architectures that facilitate their utilization. Student exercises are designed to reinforce key performance concepts and their application to EW T&E.

**EWT 0211 – Modern Air Defense Systems**
Course Length: 5 days; Classification: First day is collateral Secret; remaining 4 days are Top Secret/SCI

This course addresses the key components of modern air defense systems. The course covers the sensors, command and control, and the weapons associated with these systems at an engineering level. The focus of this course is non-former Soviet Union countries.

**EWT 0212 – Surveillance Radar**
Course Length: 5 days; Classification: Top Secret/SCI

This course addresses selected threat surveillance radars and their designs from an EW perspective at the engineering level. Topics include aspects of the surveillance radar equation, assessed radar design characteristics, key attributes which maximize mission performance, and their EW implications. The course also addresses the role of these radars in an integrated air defense system (IADS) and the various electronic protection features implemented in these radars to preserve mission performance. A wide variety of systems are considered. An in-class case study is conducted to reinforce key concepts.

**EWT 0220 – IR Directed Threat Systems**
Course Length: 5 days; Classification: Secret

This course presents engineering-level details of 10 infrared (IR) man-portable air defense systems (MANPADS) considered as threats to U.S. aircraft and relevant to U.S. IR countermeasures (IRCM) T&E. Information presented about these systems is that which is considered most important from an EW system under test (SUT) perspective. Included in the course presentation are key threat system design and theory of operation attributes essential for the EW test engineer to understand to effectively plan and conduct IRCM T&E. The course begins with a generic overview of the components and design theories common to all MANPADS and their subsystems. Common attributes of concept of operation among the various MANPADS under study are also presented. IR phenomenology considerations important to threat systems countermeasures T&E are also discussed. A review of IRCM and IR counter-countermeasures (IRCMM) techniques is provided. Details of each specific threat system are presented, beginning with background information on each system, and then engineering details of the various subsystems are described with emphasis upon the missile seeker and its signal processing. Imaging seeker concepts are also presented. IR phenomenology considerations important to threat systems countermeasures T&E are also discussed. A review of IRCM and IR counter-countermeasures (IRCMM) techniques is provided.

**EWT 0230 – Integrated Air Defense Systems (IADS)**
Course Length: 5 days; Classification: Secret

This course provides a unique in-depth description of threat command and control (C2) systems and algorithms. These C2 systems comprise the brains of the threat IADS. This course provides the fundamentals of what an IADS is and how it works and processes data. Designed to build a strong EW knowledge base, the course describes the operational building blocks used in creating, maintaining, and distributing an IADS air picture and applying that air picture to efficiently and effectively control the associated weapons systems. The course examines the processes at each level of the threat IADS, defines the relevant objectives for each IADS level, and conducts a detailed analysis of the methodology employed. Selected current threat country laydowns are addressed. Use of the IADS simulation tool, Digital Integrated Air Defense System (DIADS), is covered, as is model validation, verification, and accreditation.

**ONE-DAY SEMINAR**

**Introduction to EW Threat System T&E**
Course Length: 1 day; Classification: Secret or Unclassified

This one-day course introduces new EW T&E engineers to the subject of EW threat systems T&E. The course provides an overview of EW testing in general and the key considerations important to successful EW threat testing specifically. The course includes a “primer” on the essential design attributes common among EW threat systems for both radio frequency and infrared threats. The presentation considers those aspects of EW threat systems in general which are important to understand from an EW system under test (SUT) perspective. These attributes are then set into a functional context in order to gain an intuition about SUT cause and effect relationships, so that attendees may better understand the right kinds of information that they will need to seek out about their test systems in order to ensure good and efficient test planning and analysis.

For more information, contact:
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Electronic Warfare
Specialized Technical Training Services

Program Information and Course List

Courses in:
Electronic Warfare Fundamentals
Systems Under Test and Survivability
Threat Systems and Air Defense Principles
## Upcoming Course Schedule

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<td>August 14-17</td>
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<tr>
<td>November 30-4</td>
<td>Command Guided SAM Systems</td>
<td>Secret</td>
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Last Updated: February 2020