



WHITE EAGLE  
AEROSPACE



# Fundamentals of Unmanned Aerial Vehicles, Missions & Systems

MAKE YOUR CAREER SOAR

# Welcome

Thank you very much for your interest in White Eagle Aerospace. Since our foundation in 2006, we have become a trusted leader in professional technical training and education throughout the aerospace industry.

As a fellow aerospace professional with nearly 40 years of industry experience, I understand the critical need for ongoing technical training in the workplace. White Eagle Aerospace was established in order to meet this pressing need.

For many years, we have recognized a looming crisis in the aerospace workforce. Throughout the industry, there is an increasingly bimodal distribution of aerospace professionals. One end of that distribution contains young, well trained, highly motivated, but very inexperienced professionals. The other end of that distribution involves individuals who have been around for a long time, have a great deal of experience and are on their way out of their chosen profession. This leaves a valley between the two.

Who is going to pass the baton to the upcoming generation of aerospace professionals? Where will they get their knowledge – knowledge that goes beyond academia and even graduate degrees? Much of what they need to know is not available in today's standard university curricula. What they need is:

- specialized knowledge over a range of disciplines
- knowledge provided by a recognized expert in the field
- an experienced, expert instructor

White Eagle Aerospace recognizes these issues and provides effective solutions for your workforce. We are pleased to present you with this brochure, which outlines our Fundamentals of Unmanned Aerial Vehicles, Missions & Systems (UAV) professional short course. Our team of industry experts and master instructors is dedicated to your success. Should you have any questions about our course catalog or desire more information on how we can help MAKE YOUR CAREER SOAR, please contact us today.

Best Regards,



John Terry White,  
President/CEO  
White Eagle Aerospace



## About Our Company

**Whether you are new to the aerospace industry or have years of professional experience, we are your provider-of-choice for expert technical training.**

**Acquiring key knowledge, critical lessons-learned and technical know-how are crucial ingredients for success in today's complex and highly competitive aerospace market. Our nationally-acclaimed short courses cover a wide range of highly useful technical subjects. Each course is delivered by a subject matter expert who is also an expert technical instructor.**

**We offer you comprehensive technical training in essential topics, with minimal time away from work – all at a price that fits today's tight training budgets.**





# Target Audience

**The Fundamentals of Unmanned Aerial Vehicles, Missions & Systems (UAV) professional short course provides a fundamental, yet comprehensive, end-to-end understanding of Unmanned Aerial Vehicles (UAVs) and Unmanned Aerial Systems (UASs).**

The course is intended for technical specialists, engineers, managers and operational professionals with responsibility for the selection, design, integration, test and operation of UAVs, UAV links and UAV payloads for any military or civil application.

Course participants will explore the traceability of overall mission requirements as dictated by the total target-to-user signal chain. Specific considerations include: target electromagnetic emissions, signal propagation through the atmosphere, signal detection by sensor payloads, transmission along data links and presentation of data to the operational user.

Guided by two master instructors and world-renowned experts with over 80 years of combined experience in advanced sensor systems and electronic warfare, this 5-day intensive training course will provide participants with invaluable real-world knowledge.

## Who Will Benefit

- Weapons Engineers
- Aerospace Engineers
- Systems Engineers
- Software Engineers
- Field Engineers
- Systems Technicians
- Avionics Technicians
- Payload Operators
- Accident Investigators
- Mission Planners
- Project Managers
- Engineering Managers
- Production Managers
- Operations Managers
- Program Managers
- College Instructors
- College Students

## Group Discounts

White Eagle Aerospace is dedicated to meeting your organization's professional training needs. In order to better serve you, we offer special group discount rates and on-site training. If you have a group of 15 or more participants, we will bring our nationally acclaimed UAV short course to your location at a discounted rate. Please contact us today to learn how we can help MAKE YOUR ORGANIZATION SOAR!





# Course Description

**The Fundamentals of Unmanned Aerial Vehicles, Missions & Systems (UAV) short course provides a practical introduction to Unmanned Aerial Vehicles (UAVs) and Unmanned Aerial Systems (UASs), their missions, payloads and data links.**

Course participants will explore the traceability of overall mission requirements as dictated by the total target-to-user signal chain. Specific considerations include: target electromagnetic emissions, signal propagation through the atmosphere, signal detection by sensor payloads, transmission along data links and presentation of data to the operational user. A major portion of the course is devoted to Intelligence, Surveillance, and Reconnaissance (ISR) payloads including EO/IR IRLS, LIDAR/LADAR, MSI, HSI, SAR and EW payloads.

The UAV course provides an in-depth study of the various communications and data links employed by modern UAVs. Instruction covers the technical and operational characteristics of the Common Data Link, SATCOM, C2 and UHF data links and link susceptibility to jamming. The course culminates with thorough training in end-to-end performance analysis.

Participants will learn how to calculate link throughput performance and data rates associated with each type of payload in typical missions. They will be equipped with the knowledge they need to make key calculations for each step of the process. The course material is enhanced with realistic in-class examples, case studies and real-world problems.

## Key Course Topics

- UAV/UAS History
- Air Vehicle Classes
- New Air Vehicles
- Launch Elements
- Recovery Systems
- Electromagnetic Spectrum
- Atmospheric & Weather Effects
- EO/IR Payloads
- Target Acquisition Requirements
- Target Resolution Requirements
- IR Line Scanner Payloads
- LIDAR/LADAR Payloads
- Multispectral Payloads
- Hyperspectral Payloads
- Electronic Reconnaissance Payloads and Missions
- Digital Communication Theory
- Digital Signal Processing
- Link Requirements
- CDL & Satcom Links
- End-to-End Link Performance Analysis





# Course Outline

**The Fundamentals of Unmanned Aerial Vehicles, Missions & Systems (UAV) short course is an intensive 5-day training program that provides a maximum training experience to aerospace professionals with minimum time away from work.**

## Fundamentals of Unmanned Air Vehicles, Missions & Systems

Day	Session	Subject	Instructor
1	1	Introduction	John L. Minor
	2	History of UAV's/UAS's	John L. Minor
	3	Air Vehicle Types	John L. Minor
	4	Launch & Recovery Elements	John L. Minor
2	1	The Electromagnetic Spectrum and the Atmosphere	John L. Minor
	2	EO/IR Payloads	John L. Minor
	3	EO/IR Payloads (continued)	John L. Minor
	4	IRLS Payloads	John L. Minor
3	1	LIDAR/LADAR Payloads	John L. Minor
	2	Multi-Spectral & Hyper-Spectral Payloads	John L. Minor
	3	Radar Payloads & Missions	David L. Adamy
	4	Electronic Reconnaissance Payloads & Missions	David L. Adamy
4	1	Introduction to Digital Communication Theory	David L. Adamy
	2	Radio Propagation	David L. Adamy
	3	Radio Propagation (continued)	David L. Adamy
	4	Link Requirements	David L. Adamy
5	1	Link Requirements (continued)	David L. Adamy
	2	The Common Data Link (CDL) & SATCOM Data Link	David L. Adamy
	3	Jamming Payloads & Missions	David L. Adamy
	4	End-to-End Performance Analysis (Target to Display)	David L. Adamy



# Information at a Glance

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The course is intended for individuals with responsibility for the selection, design, integration, test and operation of UAVs, UAV links and UAV payloads for any military or civil application. Guided by two world-renowned experts with over 80 years of combined experience in advanced sensor systems and electronic warfare, participants will explore the traceability of overall mission requirements as dictated by the total target-to-user signal chain.

## Contact Information

**White Eagle Aerospace**  
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[training@whiteeagleaerospace.com](mailto:training@whiteeagleaerospace.com)  
**520-219-0526**

## Key Course Information

- **Instructors:** John L. Minor & David L. Adamy
- **Duration:** 5 days; 40 instructional hours
- **Texts:** (1) "Introduction to UAV Systems", UAV Systems Inc, 2009; Paul G. Fahlstrom & Thomas J. Gleason. (2) "Practical Communication Theory", LYNX Books, 1994; David L. Adamy.
- **Materials:** Course textbooks, course notebook with copies of all slides, visual aids, problem worksheets and reference materials, two practical wall charts: (1) an electromagnetic spectrum wall chart and (2) a weather effects on EO/IR/MMW sensors wall chart, an antenna/propagation slide rule and a scientific calculator.
- **Cost:** \$2100 for single seat.
- **Registration:** Please visit our website to view the most current Course Calendar. To register for a scheduled course, simply complete and submit the online registration form.
- **Group Discounts:** We offer special discount rates and on-site training. For more information, please contact Keele Elder at [kelder@whiteeagleaerospace.com](mailto:kelder@whiteeagleaerospace.com).





# John L. Minor

## Sensors & Systems Instructor

**John L. Minor has 35 years of technical and operational experience. He is an internationally recognized expert on military sensors, systems, and flight test. He is also a highly decorated instructor and lecturer.**

During his career, Minor served on the technical staff of the Air Force Flight Test Center, the USAF Test Pilot School, Lockheed Martin and the Lockheed Skunk Works® and others. He began his career with the 9th Strategic Reconnaissance Wing as a sensor system specialist on the SR-71 and U-2 aircraft. He has worked on a number of high-value military programs to include

the Low Altitude Navigation and Targeting Infrared for Night (LANTIRN), the F/A-18D (RC) Advanced Tactical Air Reconnaissance System (ATARS), and the RQ-3A TIER III Minus (Darkstar) Low Observable (LO) Unmanned Air Vehicle (UAV), as well as numerous other classified programs.

As the USAF Test Pilot School's former Technical Director (2004-2008) and Systems Master Instructor (1999-2003), Minor was responsible for developing a state of the art curricula and teaching sensors, weapons, systems, electronic warfare, directed energy, and unmanned systems theory, operations, and flight test to the next generation of USAF Test Pilots, Electronic Warfare Officers, and Flight Test Engineers. Minor has taught many short courses for Society of Flight Test Engineers, the Association of Old Crows (AOC), Technology Training Corporation, and has lectured throughout Europe to the Royal Aeronautical Engineering Society (RAeS) and Technical Universities.

Minor holds BSEE/MSEE degrees from the University of New Mexico/Air Force Institute of Technology. He has been honored with numerous awards and decorations to include: the 412th Test Wing's Senior Leader of the Year Award, the Society of Flight Test Engineers Directors and Fellow Awards, the San Fernando Valley Engineers' Council Distinguished Engineering Project Achievement Award, and the Engineers' Council Distinguished Engineering Life Achievement Award for his educational contributions to the Edwards AFB engineering community. In 2010 he was awarded the "Kelly" Johnson Award for "Engineering Excellence" by the Society of Flight Test Engineers. Minor is currently Chief of the Systems Engineering Division for the Ogden Air Logistics Center Engineering Directorate.



# David L. Adamy

## Electronic Warfare Systems Instructor

**David L. Adamy is an internationally recognized expert in electronic warfare and UAV links & payloads with 45 years of technical experience. He has authored 11 books and over 180 professional articles on electronic warfare and related subjects.**

Adamy has extensive experience as a systems engineer and program technical director. During his career, he has developed EW & Reconnaissance systems from DC to Light, deployed on platforms from submarines to space, with

specifications from QRC to high reliability. For the last 25 years, he has operated his own company, performing studies for the US Government and defense contractors, including two major Link/Payload trade-off analysis studies for the UAV JPO. He is a frequent guest lecturer at the Naval Postgraduate School on UAV related subjects, and has presented dozens of courses in the US and Europe on electronic warfare, UAVs and related subjects. He holds BSEE/MSEE degrees in electrical engineering and communication theory from Arizona State University/University of Santa Clara.