FALL ISSUE

AEROSPACE TECHNOLOGY
EDUCATION & TRAINING GUIDE

September – December 2017

FEATURED COURSES

- **NEW!** Common Training for DPRV Personnel | Page 34
- **NEWLY SCHEDULED!** Power Electronics for Mechanical Engineers | Page 5
- **NEWLY SCHEDULED!** Introduction to Aircraft Hydraulic System Design and Certification | Page 9
- **NEW!** AS9100D Internal Audit Program Implementation | Page 18
- **NEW!** FAA Part 21 Certification Procedures for Products and Parts | Page 20
- **NEW!** FAA Certification, Operations and Maintenance Orientation | Page 26
- **NEW!** Aviation Safety Engineer Job Functions | Page 38

PLUS—Explore Related Aerospace Technology Resources on pages 46–47.

training.sae.org

WHY SAE FOR PROFESSIONAL DEVELOPMENT?

Engineers and technical professionals in the ground vehicle and aerospace industries look to SAE as their trusted information resource and have done so for over 110 years. Get access to 300+ live online, in classroom, and on-demand learning programs. Programs in the technology areas shaping the automotive and aerospace industries. Courses designed to meet your specific needs with the right content to solve YOUR SPECIFIC CHALLENGES.

In this issue of the ***Aerospace Technology Education and Training Guide***, you'll find an extensive portfolio of courses designed to keep you ahead of the industry.

PLUS - don't miss the suggested Related Aerospace Technology Resources on pages 46-47. We've selected key SAE books, aerospace standards, journals, and technical events to further your professional development and deepen your technical knowledge.

THIS GUIDE INCLUDES EDUCATION & TRAINING AND TECHNICAL RESOURCES IN THE FOLLOWING TOPICS

- Electrical, Electronics, and Avionics
- Manufacturing
- Materials
- Parts and Components
- Quality and Safety

EARN A CERTIFICATE OF ACHIEVEMENT FROM SAE

SAE multi-course certificates provide an outline of courses designed to extend your understanding in a specific technology area. When reviewing SAE education and training material, watch for the certificate icon. It indicates which courses are part of an SAE multi-course certificate program. For a list of SAE multi-course certificate programs, visit **training.sae.org/credentialing/certificate/**.

COMMON TRAINING FOR DPRV PERSONNEL

The SAE International course *Common Training for DPRV Personnel* (formerly Known As Aerospace Supplier Quality: Common Training for Self-Release Delegates) is currently the only course available that meets education requirements of the AS9117 standard and is considered acceptable to meet compliance guidelines set forth by the standard. Successful completion of this course merits a compliance certification from Probitas, the IAQG compliance certifying body. Review the course on page 34.

SAE CUSTOMER SERVICE

Contact SAE Customer Service for any questions concerning schedules, fees, locations, or registration.

+1.877.606.7323 (US and Canada) or
+1.724.776.4970 or
CustomerService@sae.org

A LEARNING FORMAT TO FIT EVERY NEED

As the world's leader in offering access to the most extensive, multi-sector source of knowledge and expertise, SAE International provides the mobility engineering training and education needed to turn your challenges into solutions.

What is your learning need?
SAE International offers a variety of learning formats to accommodate diverse learning styles. Explore classroom, live and online, and on demand courses.

Many courses are offered in multiple formats to fit your exact need. Be sure to watch for the icons that identify the format available for each course.

Seminars or workshops available as similar live, online web seminars or on demand courses, will feature icons and information about the schedule and fees for all formats.

CATALOG KEY

Look for the icons below included with the course descriptions. The icons indicate delivery formats for the course and whether the course is part of an SAE Certificate program.

Many courses are available in multiple formats. In addition to finding courses that fit your technology need, look for courses with icons that fit the way you want to learn.

CLASSROOM
Indicates that course is an instructor-led seminar or workshop offered in a classroom setting

LIVE ONLINE
Indicates this course is an instructor-led Web Seminar offered live and online via telephone and internet connection

ON DEMAND
These offerings are available online anytime the participant would like to access the course through the internet

CERTIFICATE
This icon indicates that this course is part of an SAE International curriculum-based, multi-course certificate

As an IACET Accredited Provider, SAE International offers CEUs for its programs that qualify under the ANSI/IACET Standard.

TABLE OF CONTENTS

INTRODUCTION TO DO-178C

This seminar introduces you to industry best practices for real-world software development and how to avoid common DO-178C mistakes. This seminar presents information necessary to help minimize DO-178C risks and costs, while also maximizing software quality during avionics development. The instructor guides you through topics such as aircraft safety, systems, software planning, software requirements, and software design/code/test; and summarizes the entire ecosystem of aviation avionics software development including DO-178C's relationship to other industry standards including the SAE standards ARP-4761 for Safety and ARP-4754A for Systems Development.

LEARNING OBJECTIVES

By attending this seminar, you will be able to:

- Evaluate the premise of DO-178C
- Identify how DO-178C fits into the avionics development ecosystem
- Examine software planning and standards
- Identify software requirements, design, code, and testing for avionics
- Describe basic configuration management and quality assurance
- Analyze how to mitigate common DO-178C risks and minimize cost while applying industry-best practices

WHO SHOULD ATTEND

This course is designed for Avionics Software Managers and Engineers seeking a higher level of understanding of the requirements and practices of using DO-178C in software development.

CONTENT HIGHLIGHTS

- DO-178 Basics
  - Avionics Ecosystem, Systems, & Safety
  - Relationship to ARP-4754A and ARP-4761
- Software Planning
  - Plan for Software Aspects of Certification (PSAC)
  - Software Quality Assurance Planning (SQAP)
  - Software Configuration Management Planning (SCMP)
  - Software Development Planning (SDP)
- DO-330 Tool Qualification and DO-331 Modeling
  - Why DO-330 & DO-331
- DO-332 OOT and DO-333 Formal Methods

INSTRUCTOR

Vance Hilderman
Director of Global Services, Vector Software

Compliance with the objectives of DO-178C is the primary means for meeting airworthiness requirements and obtaining approval of software used in civil aviation products.

I.D.# C1410

SCHEDULE
October 24-25, 2017
Shanghai, China

October 30-31, 2017
Cleveland, Ohio

FEES

List:	$1,370
Members	
Classic:	$1,233
Premium:	$1,165
Elite:	$1,096

TWO-DAYS/1.3 CEUS

Get the complete course description and register: training.sae.org/seminars/c1410/

FIND OUT HOW TO GET THIS COURSE DELIVERED TO YOUR LOCATION. CONTACT SAE CORPORATE LEARNING SOLUTIONS.

+1.724.772.8529
training.sae.org/corplearning

NEW! APPLYING DO-254 FOR AVIONICS HARDWARE DEVELOPMENT AND CERTIFICATION

The DO-254 standard is a companion to the software DO-178B standard; however, there are many differences between hardware and software which must be understood. This course introduces the intent of DO-254 for commercial avionics hardware development. The content covers many aspects of avionic hardware including: aircraft safety; systems; hardware planning, requirements, design, implementation and testing. Learn industry best practices for real-world hardware development, common DO-254 mistakes and how to prevent them, and minimizing risks and costs while maximizing hardware quality. The avionics hardware development process is summarized including DO-254C's relationship to other standards including ARP-4761 for Safety and ARP-4754A for Systems Development.

LEARNING OBJECTIVES

By attending this seminar, you will be able to:

- Explain the intent of DO-254
- Explain how DO-254 fits into the avionics development process
- Implement hardware planning and standard requirements
- Assess the impact of avionic hardware requirements, design, implementation, and testing
- Employ basic configuration management and quality assurance techniques
- Identify how to mitigate common DO-254 risks and minimize cost while applying industry-best practices

WHO SHOULD ATTEND

This seminar is designed for avionics hardware managers, engineers, quality assurance and certification professionals.

CONTENT HIGHLIGHTS

- DO-254 Basics
- Hardware Development Planning
- Hardware Verification and Validation Details
- Hardware Traceability
- Common Avionics Hardware Development Mistakes and How To Prevent Them
- Avionics Hardware and DO-254 Best Practices
- Avionics Hardware and DO-254 Gap Analysis

INSTRUCTOR

Vance Hilderman
Director of Global Services, Vector Software

The avionics hardware industry world-wide is now commonly required to follow DO-254 Design Assurance Guidance for Airborne Electronic Hardware for literally all phases of development: Safety, Requirements, Design, Logic Implementation, V&V, Quality Assurance, etc.

I.D.# C1703

SCHEDULE
September 28-29, 2017
Fort Worth, Texas–*Held in conjunction with SAE 2017 AeroTech Congress & Exhibition*

FEES

List:	$1,370
Members	
Classic:	$1,233
Premium:	$1,165
Elite:	$1,096

TWO-DAYS/1.3 CEUS

Get the complete course description and register: training.sae.org/seminars/c1703/

POWER ELECTRONICS FOR MECHANICAL ENGINEERS

This 4 hour short course provides an overview of Power Electronics (PE) in use in modern transport aircraft. This course includes the context, principles, design drivers, and the main PE components of various flight applications, including those for harsh environments. This course is designed to deliver and demystify the basic theories and best practices of mechanical, electronics, thermal management, safety, reliability and maintainability disciplines. In addition, future trends in Power Electronics will be discussed.

LEARNING OBJECTIVES

By attending this seminar, you will be able to:

- Explain and evaluate the use of the power electronics in various aircraft systems
- Identify and explain the various PE architectures
- Identify the main requirements and technical drivers to develop PE units
- Identify the various components of PE equipment
- Evaluate lessons learned from existing PE products flying in various commercial aircraft

WHO SHOULD ATTEND

Engineers, in particular ‘‘mechanical” engineers, executives, and other key personnel with little or no previous electronics knowledge or experience. The information presented in this course will also benefit individuals from the production and support disciplines, including airlines and maintenance repair organizations.

CONTENT HIGHLIGHTS

- Design Theory
  - Fundamentals of Power Electronics
  - Typical motor control architecture
- Component Functions and Technologies
  - Active components; Passive components
- Harsh Environments
  - Aircraft context
  - Main design drivers for PE equipment
- Other Environmental Constraints
  - EMI, Lightning
  - Thermal management
- Best Practices
  - Multidisciplinary approach
  - Lessons learned examples
- Future Trends

INSTRUCTOR

Michel Todeschi
Head of the Electromechanical Actuation and THSA group, Airbus Group

SAE International is pleased to offer this professional development seminar in conjunction with the SAE A-6 Aerospace Actuation, Control and Fluid Power Systems Committee meeting Oct. 16-19, 2017 in St. Louis, Missouri.

I.D.# C1420

SCHEDULE
October 16, 2017
St. Louis, Missouri

FEES

List:	$315
Members	
Classic:	$284
Premium:	$268
Elite:	$252

.5-DAYS/.4 CEUS

Get the complete course description and register: training.sae.org/seminars/c1420/

ARP4754A AND THE GUIDELINES FOR DEVELOPMENT OF CIVIL AIRCRAFT AND SYSTEMS

ARP4754A provides the practices for showing compliance with regulations and serves to assist companies in developing and meeting its own internal standards though application of the described guidelines.

ARP4754A substantially revises the industry guidance for the development of aircraft and aircraft systems while taking into account the overall aircraft operating environment and functions. ARP4754A provides the practices for showing compliance with regulations and serves to assist companies in developing and meeting its own internal standards though application of the described guidelines.

This seminar gives you an in-depth presentation of the guidelines introduced in the revised recommended practice for aircraft and systems development as well as the critical concepts used in aircraft and systems development processes for certification. The aircraft/systems development process and its interactions with the safety, hardware development and software development processes is discussed along with the incorporated changes, with special emphasis on new material and development concepts. Additionally, the course reviews the relationship and key interactions between the aircraft/system guidance material established in ARP4754A and the guidance material in DO-254 for hardware and DO-178B for software to ensure you gain insight into the expectations established for aircraft certification.

You receive a copy of *ARP4754A: Guidelines for Development of Civil Aircraft and Systems standard and AIR6110: Contiguous Aircraft/System Development Process Example* as part of the materials for this course.

LEARNING OBJECTIVES

By attending this seminar, you will be able to:

- Identify the changes between the legacy ARP4754 and ARP4754A
- Explain the aircraft/systems development process and its interaction with the safety assessment process
- Identify the key aircraft/systems development processes and their interrelationships
- Discover and be able to apply new guidelines on Functional and Item Development Assurance Levels (FDAL & IDAL)
- Apply the new guideline material within your own company context

WHO SHOULD ATTEND

This seminar is designed for engineers and other key personnel working in the design, development, and safety assessments of aircraft and aircraft systems.

CONTENT HIGHLIGHTS

- ARP4754A Development History
  - How we got here
  - Who contributed to the revision?
- ARP4754 to ARP4754A Change Highlights
- Aircraft / Systems Development Process
  - Discussion of Interactions with safety processes
  - Discussion of Interactions with hardware and software development processes
- Integral Processes
  - Requirement Management
  - Implementation Verification
  - Configuration Management
  - Process Assurance
  - Certification / Regulatory Authority Coordination
- New Guidance – FDAL & IDAL Examples
- New Guidance – System Development Objectives
- AIR6110 – Example Application

INSTRUCTOR

Eric M. Peterson
Vice-President of Systems and Safety, Electron International, Inc.

YOUR CONNECTION TO THE MOBILITY ENGINEERING COMMUNITY

The Member Connection is an online community providing multiple engagement opportunities:

• Join the conversation about SAE standards development and leverage timely technical discussions and topics that affect you on the job

• Build your professional network, and seek and share advice among industry experts

• Learn about the latest volunteer opportunities all in one place

• Access the Career Counselor series—ten minute videos on soft-skill enhancement such as time management and goal setting strategies

And more...

The Member Connection is available exclusively to SAE Members at connection.sae.org. Not a member? Explore the Member Connection at connection.sae.org and join for complete access.

I.D.# C1118

SCHEDULE
September 28-29, 2017
Fort Worth, Texas - *Held in conjunction with the SAE 2017 AeroTech Congress & Exhibition*

October 16-17, 2017
Farmington, Connecticut

FEES

List:	$1,515
Members	
Classic:	$1,364
Premium:	$1,288
Elite:	$1,212

TWO-DAYS/1.3 CEUS

Get the complete course description and register: training.sae.org/seminars/c1118/

ARP4761 AND THE SAFETY ASSESSMENT PROCESS FOR CIVIL AIRBORNE SYSTEMS

ARP4761 describes guidelines and methods for performing safety assessments. This seminar provides you with information for conducting industry accepted safety assessments consisting of Functional Hazard Assessment (FHA), Preliminary System Safety Assessment (PSSA), and System Safety Assessment (SSA). Safety analysis methods including Fault Tree Analysis (FTA), Dependence Diagram (DD), Markov Analysis (MA), Failure Modes and Effect Analysis (FMEA) and Common Cause Analysis (CCA) are part of the discussion. You receive the seminar handout and a copy of ARP4761: *Guidelines and Methods for Conducting the Safety Assessment Process on Civil Airborne Systems and Equipment.*

LEARNING OBJECTIVES

By attending this seminar, you will be able to:

- Identify multiple safety assessment methods and tools
- Relate the key attributes of ARP4761 FHA, PSSA, SSA, FTA, DD, MA, CCA
- Identify the applications for safety tools and the interaction between the safety processes and the development processes
- Apply multiple safety methods in completing a PSSA or SSA
- Evaluate future tools and methods for inclusion in ARP4761A

WHO SHOULD ATTEND

Engineers and professionals, at all levels, who are involved in or interact with the aircraft and/or aircraft system safety assessment processes.

CONTENT HIGHLIGHTS

- Key Definitions
- Safety / Development Process
- Functional Hazard Assessment (FHA)
- Preliminary System Safety Analysis (PSSA)
- Fault Tree Analysis (FTA); Markov Analysis (MA)
- Dependency Diagram (DD)
- Failure Modes & Effects Analysis (FMEA)
- Common Cause Analysis (CCA)
- System Safety Analysis (SSA)
- ARP4761A

INSTRUCTOR

Eric M. Peterson
Vice President of Systems and Safety, Electron International, Inc.

Learn the guidelines for conducting industry accepted safety assessments consisting of Functional Hazard Assessment (FHA), Preliminary System Safety Assessment (PSSA), and System Safety Assessment (SSA).

I.D.# C1245

SCHEDULE
October 19-20, 2017
Farmington, Connecticut

FEES

List:	$1,440
Members	
Classic:	$1,296
Premium:	$1,224
Elite:	$1,152

TWO-DAYS/1.3 CEUS

Get the complete course description and register: training.sae.org/seminars/c1245/

INTRODUCTION TO AIRCRAFT HYDRAULIC SYSTEM DESIGN AND CERTIFICATION

This four hour short course provides an overview of hydraulic system design of typical business and commercial aircraft. Topics will include the principles, system architectures, power sources, and the main components and technologies of hydraulic systems including hydraulic power generation, filtration, fluid storage, distribution, sensing and control. The step by step process of designing a hydraulic system will also be reviewed. Additionally, future trends in hydraulic systems will be discussed.

LEARNING OBJECTIVES

By attending this seminar, you will be able to:

- Explain the operating principles and design process of an aircraft hydraulic system
- Identify system architectures attributes, including those that affect aircraft safety
- Identify power sources for hydraulic systems and how they operate
- Identify the various components of hydraulic systems
- Describe the hydraulic system design and certification process

WHO SHOULD ATTEND

This seminar is designed for engineers, program managers, executives, and other key personnel with little or no previous hydraulic system knowledge or experience.

CONTENT HIGHLIGHTS

- General Introduction to Aircraft Hydraulic Systems
- Hydraulic System Terminology and Standards
- A Brief History of Aircraft Hydraulic Systems
- System Engineering – Principles and Practice
- Requirements Quality
- Hydraulic System Design and Certification
  - Proposal Phase
  - Preliminary Design Phase
  - Detail Design Phase
  - Aircraft Production Build and Test Phase
  - Flight Test and Certification Phase
- Hydraulic Interface with Utility Systems
- Fluid Conveyance System Design
- Introduction to Hydraulic Fluids
- Market Trends and Future Technologies

INSTRUCTOR

Jon R. Jeffery
Director of Innovation and Marketing, Hydraulic System Division, Parker Aerospace

SAE International is pleased to offer this professional development seminar in conjunction with the SAE A-6 Aerospace Actuation, Control and Fluid Power Systems Committee meeting Oct. 16-19, 2017 in St. Louis, Missouri.

I.D.# C1205

SCHEDULE
October 16, 2017
St. Louis, Missouri

FEES

List:	$315
Members	
Classic:	$284
Premium:	$268
Elite:	$252

.5-DAYS/.4 CEUS

Get the complete course description and register: training.sae.org/seminars/c1205/

NEW! MATERIALS SELECTION PROCESS FOR ENGINEERING DESIGNS

This course covers the engineering process for selecting materials to use for components and joints within a product. Applying the process enables selection of materials that optimize product performance, reliability and cost, while keeping projects on schedule. Topics include: identifying materials selection criteria, selecting candidate materials, and evaluating materials to determine suitability. Considerations include design for reliability and design for manufacturability. Case studies are used to reinforce the concepts.

LEARNING OBJECTIVES

By attending this seminar, you will be able to:

- Explain the steps for the materials selection process
- Describe the categories of product design requirements that must be considered for materials selection
- Identify materials selection criteria based on the product design requirements
- Explain how potential materials to use for a component or joint
- Identify the evaluations needed to determine whether materials are suitable for an application

WHO SHOULD ATTEND

Design engineers who select materials to use in products, and program engineers who plan product development schedules. The information enables design teams to more quickly assess risks to meeting development schedules and budget and improves the probability of developing products that meet requirements. Engineering and program managers, and manufacturing engineers will also benefit.

CONTENT HIGHLIGHTS

- Materials Selection Process Steps
- Iterative Process and Trade-offs
- Design Hierarchy Between Component Physical Construction and Materials
- Design Requirements Categories
- Identify Product, Sub-assembly, and Component Requirements for the Different Design Requirements Categories
- Identify Component Materials Selection Criteria
- Identify Potential Materials
- Identify and Perform Tests to Evaluate the Materials
- Do Materials Satisfy Selection Criteria
- Making the Final Choice

INSTRUCTOR

Michael Pfeifer
President, Industrial Metallurgists, LLC

Up to 70% of the cost to make a product is due to its materials. Therefore, getting the materials right will have a big impact on the success of a product. Many organizations have difficulties getting the materials right and end up facing problems

I.D.# WB1520

SCHEDULE
Future dates are planned for this course. Check the course web page for the most up-to-date information and schedule.

FEES

List:	$640
Members	
Classic:	$576
Premium:	$544
Elite:	$512

FOUR, 2-HOUR SESSIONS/.8 CEUS

Get the complete course description and register: training.sae.org/webseminars/wb1520/

FIND OUT HOW TO TRAIN YOUR WHOLE TEAM. CONTACT SAE CORPORATE LEARNING SOLUTIONS.

+1.724.772.8529
training.sae.org/corplearning

CORROSION ENGINEERING AND PREVENTION

This course focuses on the fundamentals of corrosion engineering and corrosion prevention of metallic and alloy structures and non-metallic composites and hybrid materials; and recent challenges and opportunities in corrosion of advanced composites. Different types of corrosion, methods of protection and prevention, optimum engineering design of resistant parts and components, standard corrosion tests, responsibilities of corrosion engineers, and a process establishing an advanced corrosion laboratory will be discussed. This course covers most tests for corrosion studies.

LEARNING OBJECTIVES

By attending this seminar, you will be able to:

- Describe the basic electrochemical concepts of various corrosion processes
- Articulate and utilize corrosion prevention strategies and estimate corrosion behavior of materials and components
- Describe the role of ion-diffusion, crystal structure, and grain size on corrosion of metals and alloys
- Design and engineer corrosion resistive components for different industries
- Define methods of corrosion protection and interpret corrosivity maps
- Perform standard corrosion tests, in-depth analyses of test results
- Define anodic/cathodic protections and coatings specifications for various components
- Formulate corrosion prevention coatings materials for metallic and non-metallic structures

WHO SHOULD ATTEND

Engineers interested in corrosion and corrosion prevention, or working on the production of corrosion resistive materials and chemicals.

CONTENT HIGHLIGHTS

- Fundamentals of Corrosion and Corrosion Prevention
- Mechanisms and Prevention of Corrosion
- Corrosion Engineering and Coating Technologies
- Surface Coating Technologies for Corrosion Prevention
- Supply and Manufacturing of Corrosion Prevention Materials
- Corrosion and Corrosion Prevention of EVs and HEVs with Batteries, Supercapacitors and Fuel Cells

INSTRUCTOR

Gholam-Abbas Nazri
Technical Director of New Technologies, Frontier Applied Sciences and Technologies, LLC

The transportation industry, including motor vehicles, aircraft, and commercial, all experience significant issues with corrosion which results in billions of dollars of loss each year. Corrosion education and prevention is essential to improve and increase the service life of parts.

I.D.# C1217

SCHEDULE
October 12-13, 2017
Troy, Michigan

FEES

List:	$1,370
Members	
Classic:	$1,233
Premium:	$1,165
Elite:	$1,096

TWO-DAYS/1.3 CEUS

Get the complete course description and register: training.sae.org/seminars/c1217/

Explore this series of on demand training courses covering metallurgy topics. Developed by Industrial Metallurgists, LLC and offered by SAE International to automotive engineers worldwide. This collection of courses teaches practical metallurgy concepts assisting with design and manufacturing decisions and addressing common problems. The courses are designed for design, manufacturing, and quality engineers but sourcing professionals and technicians could also benefit.

WHAT YOU WILL RECEIVE

- With each registration, you receive three-months of on demand access to the presentations
- Integrated knowledge checks to reinforce key concepts
- The downloadable course workbook
- Proof of participation as part of your transcript

See the full course list at training.sae.org/metallurgy/

NEW! FAILURE ANALYSIS OF METALS

Quickly getting to the bottom of a metal failure is critical for preventing future failures, keeping customers happy, and keeping manufacturing lines running. This course will teach you how to perform failure analysis of fracture, corrosion, and manufacturing failures.

training.sae.org/metallurgy/pd261505on/

PRINCIPLES OF METALLURGY

This course teaches the basic microscopic structures present inside of metals, how they influence metal strength, and how these structures can be modified using common manufacturing processes to obtain specific mechanical properties. Several examples are presented to demonstrate how common alloying and manufacturing methods are used to modify the microscopic structures and properties of metals.

training.sae.org/metallurgy/pd261322on/

CORROSION OF METALS

The corrosion of metals is covered in this course. The physics of corrosion is explored as a background for the discussion of seven common types of corrosion. Learn why and how corrosion occurs and methods for controlling corrosion.

training.sae.org/metallurgy/pd261328on/

CORROSION OF METALS: CHEMISTRY OF CORROSION

This course covers the fundamental mechanisms involved in the aqueous (water based chemicals) corrosion of metals. The factors that influence the inherent corrosion behavior of a metal and the factors that influence metal corrosion rate will be discussed.

training.sae.org/metallurgy/pd261334on/

CORROSION OF METALS: GALVANIC CORROSION

Learn why and how galvanic corrosion occurs and methods for controlling it.

training.sae.org/metallurgy/pd261336on/

CORROSION OF METALS: UNIFORM CORROSION

Learn the how and why of uniform corrosion of metals—how it occurs and how to to control it.

training.sae.org/metallurgy/pd261335on/

HARDNESS TESTING

This on demand course focuses on Rockwell and Brinell hardness testing and Vickers and Knoop microhardness testing. Learn how tests are performed, test sample requirements, test parameter selection, and testing requirements.

training.sae.org/metallurgy/pd261331on/

METALLURGY OF PRECIPITATION STRENGHTHENING

This course teaches about the microscopic changes that take place in a precipitation strengthened alloy and the effects on the properties of the alloy. The effects of the different heat treating steps and heat treating process parameters on the alloy microstructure and the effects on alloy strength are discussed.

training.sae.org/metallurgy/pd261329on/

METALLURGY OF STEEL CASE HARDENING

This on demand course discusses common steel case hardening processes and how they are used to modify the surface layers of steels to obtain specific mechanical properties. Learn about process parameters and their affect on case composition, depth, microstructure, and properties.

training.sae.org/metallurgy/pd261333on/

METALLURGY OF STEEL THROUGH HARDENING

This course covers the metallurgy of steel through hardening processes. Learn about the effects of heat treating temperature and cooling rate on steel microstructure and properties, and the effects of the interaction between heat treating process parameters and steel composition on through hardened steel microstructure and strength.

training.sae.org/metallurgy/pd261330on/

METALLURGY OF STEEL: PRINCIPLES

Learn the phases and microstructures that form in steels, their effects on steel properties, the microstructure changes that occur when steel is heated and cooled, and the effects of carbon content and cooling rate on the microstructures that form in this course. All this information is applicable to understanding the effects of steel heat treating processes and heat treating process parameters on the microstructure and properties of heat treated plain carbon, low-alloy, and tools steels.

training.sae.org/metallurgy/pd261326on/

TENSILE TESTING

Learn about tensile testing of metals with a focus on how testing is performed and tensile properties are measured. Includes: calculation of stress and strain; and stress and strain curve.

training.sae.org/metallurgy/pd261308on/

COMING SOON! DESIGN FOR ADDITIVE MANUFACTURING: TOWARDS END-PART PRODUCTION

This web seminar fills a gap between designers that are familiar with design tools and the emerging technologies of Additive Manufacturing, which are mostly in the manufacturing domain in most organizations. The goal of this course is to give designers the information they need to start designing for AM at all levels –identifying and justifying use of AM technology for a particular part, selecting the right process and material for the application in mind and ensuring it is designed with the advantages and considerations of AM in mind. The course is not intended to serve as a software-training class or as a deep dive into any specific AM process, but rather to draw connections between design and AM from a designer's perspective.

AM offers a range of opportunities in design freedom and mass customization as well as in cost and lead time reduction in some cases. Today, it is essential for designers to embrace AM as a possible manufacturing method to ensure their products are competitive and also to unlock the design innovation that AM enables.

LEARNING OBJECTIVES

By attending this seminar, you will be able to:

- List the different polymer and metal AM process technologies and materials and identify which of these are being used for functional part production
- Select the optimum AM material and process for a particular application
- Predict how design decisions impact manufacturability for the selected AM process and apply design rules and guidelines to your design process
- Quantify the expected properties of the AM parts you are designing
- Discover how topology optimization, cellular structures and other disruptive design techniques can be leveraged with AM and associated software tools
- Identify the different drivers for adopting AM for a particular part, with regard to cost, lead time, supply chain and performance risks
- Relate to the challenges and ongoing research efforts to be able to move forward with AM implementation in the presence of rapid change in the field
- Develop a comprehensive strategy to bring AM for functional part production into your organization that addresses both the benefits and impacts

WHO SHOULD ATTEND

Designers working in aerospace or ground vehicle chartered with designing next generation solutions, designing replacement parts, or designing tools used in the manufacturing process will benefit from this course.

CONTENT HIGHLIGHTS

- Additive Manufacturing Processes
  - Introduction to AM
  - Polymer AM
  - Other processes and trends
  - Functional parts case studies
- Processes, Constraints, and Considerations
  - Materials options & selection
  - Geometric, aesthetic, and conformance considerations
  - Key process concepts
- Introduction to Design for AM
  - The need for new design thinking with AM
  - Four levels of AM design
  - Introduction to software tools for AM
- Topology Optimization
  - The case for sustainable design
  - Introduction to optimization concepts
  - Material models
  - Manufacturability
- Cellular Structures
  - Biometric underpinnings
  - Classification
  - Modeling approaches
  - Demo with topology
- Build Preperation
  - Support fundamentals
  - Build preparation demos
- Implementing AM: A Practical Guide for Designers
  - Part selection for AM
  - Challenges
  - Succesful AM Adoption Transition Strategies
  - Resources
- Case Studies

INSTRUCTORS

Dhruv Bate
Senior Technologist, Phoenix Analysis & Design Technologies, Inc.

I.D.# WB1705

SCHEDULE
Future dates are planned for this course. Check the course web page for the most up-to-date information and schedule.

FEES

List:	$720
Members	
Classic:	$648
Premium:	$612
Elite:	$576

10-HOURS/1.0 CEUS

Get the complete course description and register at: training.sae.org/webseminars/wb1705/

FIND OUT HOW TO TRAIN YOUR ENTIRE TEAM. CONTACT SAE CORPORATE LEARNING SOLUTIONS.

+1.724.772.8529
training.sae.org/corplearning

AUTOMATED SYSTEMS FOR AEROSPACE AND SPACE APPLICATIONS

The instructor guides you through the types, components, operation, application, cost benefits, laws, strengths, and limitations of automation. The information presented covers the breadth and scope necessary for you to be an effective participant in the decision process when automation has become a consideration to replacing tasks previously done by hand. Attendees will receive a copy of the book *Automated/ Mechanized Drilling and Countersinking of Airframes* by the instructor.

LEARNING OBJECTIVES

By attending this seminar, you will be able to:

- Understand the function of automation in an aerospace factory
- Decide if automation is right for your factory or application
- Select the right automation for your application
- Install, transition to production, and maintain the selected automation
- Perform a feasibility analysis and an Return on Investment (ROI) for factory automation

WHO SHOULD ATTEND

This course is designed for all interested in acquiring an understanding of the power and pitfalls of automation before purchase and how to select and install the right automation.

CONTENT HIGHLIGHTS

- Why airframes have holes
- Airframe Manufacturing Cost Drivers
- Incentives & Disincentives to Automate
- Types of Automation
- Considerations before Replacing Hand Operations with Mechanization or Automation
- How to Choose the Right Automation
- Installation
- Test Procedures
- Transition to Production
- Training and Maintenance
- Social Impact
- Future State of Airframes and Automation

INSTRUCTOR

George (Nick) Bullen
President & CEO, Smart Blades, Inc.

This course introduces the components necessary to be informed and knowledgeable about the acquisition, installation, and maintenance of automated systems for aerospace and space applications.

I.D.# C1313

SCHEDULE
September 29-30, 2017
Fort Worth, Texas–Held in conjunction with *SAE 2017 AeroTech Congress & Exhibition*

FEES

List:	$1,370
Members	
Classic:	$1,233
Premium:	$1,165
Elite:	$1,096

TWO-DAYS/1.3 CEUS

Get the complete course description and register: training.sae.org/seminars/c1313/

GET THIS COURSE DELIVERED TO YOUR LOCATION. CONTACT SAE CORPORATE LEARNING SOLUTIONS.

+1.724.772.8529
training.sae.org/corplearning

INTRODUCTION TO COMPOSITES FABRICATION AND ASSEMBLY IN AEROSPACE, SPACE, AND TRANSPORTATION

The instructor defines, illustrates, and describes the innovative manufacturing processes and technologies used to solve the "composite challenge" for aerospace and space vehicles. The information presented in this seminar, derived from the successful application and demonstration of these technologies and processes on flight hardware, serves to provide solutions for the manufacturing processes and technology challenges slowing the migration of this technology beyond the aerospace and space Industries. Attendees will receive a copy of the book *Automated/Mechanized Drilling and Countersinking of Airframes* by the instructor.

LEARNING OBJECTIVES

By attending this seminar, you will be able to:

- Define the current state of composties manufacturing
- Evaluate critical emerging technologies that will enable expansion of composites
- Identify innovative manufacturing processes that enable low cost composite manufacturing
- Determine the critical features for successful composite part assembly
- Evaluate the key characteristics of various composites manufacturing processes

WHO SHOULD ATTEND

Individuals looking for information related to efficient solutions for composites manufacturing including engineering disciplines from manufacturing, design, industrial, tooling, quality, and mechanical. Non-engineering management and staff will benefit from information presented.

CONTENT HIGHLIGHTS

- Composites in Aerospace & Space Launch Vehicles
- Composites in Inhabited & Uninhabited Aerial Space Vehicles
- Max Launch Abort System (MLAS): An Example of Innovation
- Quality Assessment
- Vehicle Assembly
- Vehicle Flight or Launch
- Future Applications
- Extensibility

INSTRUCTOR

George (Nick) Bullen
President & CEO, Smart Blades, Inc.

This course introduces you to composites technologies that have applications beyond aerospace - including such markets as trucks, automobiles, and wind turbines.

I.D.# C1311

SCHEDULE
September 28, 2017
Fort Worth, Texas–Held in conjunction with *SAE 2017 AeroTech Congress & Exhibition*

FEES

List:	$855
Members	
Classic:	$770
Premium:	$727
Elite:	$684

ONE-DAY/0.7 CEUS

Get the complete course description and register: training.sae.org/seminars/c1311/

NEW! AS9100D INTERNAL AUDIT PROGRAM IMPLEMENTATION

All Manufacturing, Maintenance, Design and/or Distribution Aerospace Companies already certified or seeking certification under AS91XX Standards would be interested in the content of this course.

One of the most important requirements for AS91XX series and other quality standards, is to create, implement and maintain an effective Internal Audit Program. An improperly designed and implemented Internal Audit Program could result in non-conformances, leading companies to improperly identify and describe non-conformances, apply incomplete or inadequate root cause analyses, establish ineffective corrective actions, and implement incomplete Internal Auditor Qualification Programs. A well-developed auditing program enables the monitoring of and improvements to, the effectiveness of the Quality Management System (QMS)–which will reduce risk and cost of non-conformances.

This unique seminar covers the creation, implementation, and maintenance of an effective Internal Audit Program, including: preparation, follow-up and closure of the internal audit, and an internal auditor qualification program. The information presented in this seminar is related to the AS9100D Internal Auditor Training course but extends to the entire Internal Auditor Process including creation, implementation, and sustainment.

LEARNING OBJECTIVES

By attending this seminar, you will be able to:

- Describe the requirements of AS91XX series standards for internal audits
- Discuss the inputs, activities and outputs of an Internal Audit Program
- Recognize the different inputs and steps needed to implement and monitor an Internal Audit Program
- Demonstrate the knowledge, tools and steps to perform an Internal Audit Program from the opening meeting to the closing meeting
- Recognize the activities needed for non-conformance follow-up and closure
- Describe the process for creating an Internal Auditor Qualification Program
- Employ strategies to get everyone involved and succeed when conducting an internal audit

WHO SHOULD ATTEND

This seminar is designed for aerospace industry roles such as Quality Managers, Quality Engineers, Internal Auditors, Plant Managers, Compliance Officers, etc. This course applies to any discipline associated with Quality Management Systems, Internal Audit Program Management, Quality Control and Compliance. Internal auditees may also find the course helpful in understanding how an Internal Audit Program works to allow for more adequate preparation.

CONTENT HIGHLIGHTS

- Diagnostic Test
- Principles of Auditing
- AS9100D Requirements for Internal Audits
- Creating an Internal Audit Program
  - Types of audits
  - Audit program responsibilities
  - Inputs, activities and outputs
  - Audit forms
- Implementing an Internal Audit Program
  - Objectives, scope and criteria
  - Audit tools and techniques
  - Selecting audit team members
  - The team leader
  - Considerations to get everyone involved
  - Outcome of the internal audit program
- Monitoring the Internal Audit Program
- Preforming an Internal Audit
  - Preparation
  - Conducting an internal audit
  - Considerations to success
  - Internal audit findings and reports (AS9101F forms)
- Internal Auditor Qualification Program
  - Lead and internal auditor profile
  - Selection of candidates
  - Evaluation
  - Re-qualifications

INSTRUCTOR

Dario Yamamoto
Industry Consultant

I.D.# C1713

SCHEDULE
October 24-26, 2017
Farmington, Connecticut

FEES

List:	$1,745
Members	
Classic:	$1,571
Premium:	$1,483
Elite:	$1,396

THREE-DAYS/2.0 CEUS

Get the complete course description and register: training.sae.org/seminars/c1713/

CUSTOMIZE A TRAINING PROGRAM TO FIT YOUR BUSINESS NEED

Contact SAE Corporate Learning Solutions for more information +1.724.772.8529 or corplearn@sae.org

NEW! FAA PART 21 CERTIFICATION PROCEDURES FOR PRODUCTS AND PARTS

This course is designed to provide participants with an understanding of the processes that encompass aircraft certification, including compliance with FARs, certification procedures and post certification responsibilities. It is also intended to introduce participants to the many regulatory issues upon which companies make business decisions that can be derailed by failing to see the part 21 implications. Such issues may include licensing, supplier control and relocation of manufacturing either domestically or internationally. Aerospace professionals will be able to implement time and resource saving actions resulting in cost savings. Participants will explore concepts of supplementing a Type Certificate, production certification procedures, quality system compliance, airworthiness certificates, and export procedures. Technical Standards procedures, parts manufacturing approval procedures, and implementation of the Change Product Rule and how to determine its applicability will also be covered.

Part 21 is the FAA regulation that provides the regulatory framework to conduct certification of products and parts. This includes the engineering, airworthiness, production and quality systems
The aerospace industry is hinged around compliance with Part 21; however, comprehension of Part 21 and its role in civil certification is challenging.

LEARNING OBJECTIVES

By attending this seminar, you will be able to:

- Define Part 21 and its role in the overall regulatory rule structure
- Describe and determine your role as a design approval holder(TC/STC/TSO/PMA)
- Describe and determine your role as a production approval holder (PC/TSOA/PMA)
- Outline what constitutes an FAA approved quality system
- Define the Various FAA airworthiness certificates and the impacts and implications for owner/operators
- Explain what constitutes changes to a design approval

WHO SHOULD ATTEND

This seminar is designed for aerospace engineering professionals such as: certification engineers and technicians, engineering leaders, program managers, business development personnel and compliance specialists. This course applies to any discipline associated with certification in areas such as: the certification of products, testing, leading certification projects, regulatory impact on new business opportunities and compliance with ITAR/EAR. The information presented in this seminar will be of interest to individuals interested in enrolling in other SAE seminars such as: *Aircraft Cabin Safety and Interior Crashworthiness* (ID# C0926; page 40), *FAA Certification, Operations & Maintenance Orientation* (ID# C1707; page 26), *Aviation Safety Engineer Job Functions* (ID# C1708; page 38).

CONTENT HIGHLIGHTS

- Subpart A – General
- Subpart B – Type Certificates
- Subpart C – Provisional Type Certificates
- Subpart D – Changes to Type Certificates
- Subpart E – Supplemental Type Certificates
- Subpart F – Production Under Type Certificate
- Subpart G – Production Certificates
- Subpart H – Airworthiness Certificates
- Subpart I – Provisional Airworthiness Certificates
- Subpart K – Parts Manufacturing Approvals
- Subpart L – Export Airworthiness Approvals
- Subpart N
  - Acceptance of aircraft engines and propellers
  - Acceptance of articles
- Subpart O
  - Quality system
  - Quality manual
  - Location of/or changes to manufacturing facilities
  - Design changes
  - Changes in quality system

INSTRUCTOR

David Downey
Consultant & Trainer, Downey Aviation Services

or

Frederick Stellar
Industry Consultant

I.D.# C1701

SCHEDULE
Future dates are planned for this course. Check the course web page for the most up-to-date information and schedule.

FEES

List:	$1,370
Members	
Classic:	$1,233
Premium:	$1,165
Elite:	$1,096

TWO-DAYS/1.3 CEUS

Get the complete course description and register:
training.sae.org/seminars/c1701/

NEED TO TRAIN YOUR WHOLE TEAM? CONTACT SAE CORPORATE LEARNING SOLUTIONS.

+1.724.772.8529
training.sae.org/corplearning

UNDERSTANDING THE FAA PARTS MANUFACTURER APPROVAL PROCESS

This course covers critical topics and steps of the FAA-PMA approval process. It begins with an overview of the Federal Aviation Administration (FAA) organizational structure then guides you through the roles and responsibilities of the PMA applicant, Aircraft Certification Office (ACO), Manufacturing Inspection District Office (MIDO), Flight Standards District Office (FSDO), and the Aircraft Evaluation Group (AEG) as outlined in FAA policies and guidelines on FAA-PMA Approval. The instructor presents the topics covered in all PMA engineering analyses including Approval by Identicality, Licensing Agreement, and Test and Computation.

LEARNING OBJECTIVES

By attending this seminar, you will be able to:

- Understand the PMA process throughout the product life-cycle
- Recognize the roles and responsibilities of the PMA applicant
- Identify the roles and responsibilities of the FAA and FAA Designees
- Manage the PMA approval process with respect to schedules and time-lines
- Identify the required content for an acceptable Engineering Design Analysis

WHO SHOULD ATTEND

Engineering and manufacturing managers, design, airworthiness and certification engineers, quality assurance professionals, program managers, consultants, FAA designated engineering and airworthiness representatives (DER and DAR), and others involved in FAA-PMA certification activities.

CONTENT HIGHLIGHTS

- The FAA / Design & Production Approvals
- The Purpose for FAA-PMA
- What to Expect From Applicants
- Responsibilities of the Aircraft Certification Office (ACO) and the Manufacturing Inspection District Office (MIDO)
- Designated Engineering Representatives (DER) and Organization
- Engineering Analysis and Material Analysis Tools

INSTRUCTOR

George J. Ringger
Industry Consultant
Adjunct Instructor of Aeronautics, Embry-Riddle Aeronautical University

Understanding the steps required in the FAA Parts Manufacturer Approval (PMA) process can greatly streamline the approval life-cycle and reduce unnecessary costs and delays.

I.D.# C1324

SCHEDULE
December 4-5, 2017
Puyallup, Washington

FEES

List:	$1,370
Members	
Classic:	$1,233
Premium:	$1,165
Elite:	$1,096

TWO-DAYS/1.3 CEUS

Get the complete course description and register: training.sae.org/seminars/c1324/

PRINCIPLES OF ISO 9001, ISO/TS 16949, AND AS9100

Understanding the purpose and intended use of standards, directives and requirements sets the foundation for developing a functional management system. This 35-minute, online short course is intended to present ISO 9001, ISO/TS 16949 and AS9100 as purpose driven management systems that are necessary for companies to survive in our fast-moving economy.

LEARNING OBJECTIVES

By participating in this On Demand course, you will be able to:

- Recognize the need for international, imposed quality management systems and standards
- Describe the history leading up to the ISO 9001
- Explain why the Automotive and Aerospace industries need specific supplements to the ISO 9001
- Identify key elements of a quality management system incorporated in the quality management standards, including configuration management and continuous improvement
- Describe the Plan, Do, Check, Act process and how it can be applied to all processes to increase production and reduce waste
- Define key terms and summarize key elements used with the quality standards included in sections 1-10 of ISO 9001:2015

CONTENT HIGHLIGHTS

- The Cost of Poor Quality
- History and Development of the ISO 9001, ISO/TS 16949 and AS9100
- Quality Management System Principles and the Process Approach
- Terms and Definitions
- Overview of the Sections in ISO 9001:2015

WHO SHOULD ATTEND

Management and personnel in all departments from sales and marketing to engineering, purchasing, production, customer service, receiving, packaging, storage, shipping, and beyond will benefit from the purpose driven management systems that are necessary to deliver customer satisfaction and survive in the global economy.

INSTRUCTOR

Joseph Sorrentino
President and CEO, Lean Quality Systems, Inc.

What you will receive:

- 90-days of online access to the 35 minute presentation
- Integrated knowledge checks to reinforce key concepts
- Proof of Participation

I.D.# PD530824ON

SCHEDULE
On Demand/90-day Access

FEES

List:	$60
Members	
Classic:	$54
Premium:	$51
Elite:	$48

35-MINUTES

Get the complete course description and register: training.sae.org/odc/pd530824on/

Real interactive learning from this on demand course!

View a demo of this new course: go.sae.org/new_ISO_ondemand.html

NEW! UNDERSTANDING THE AS9120B: 2016 STANDARD: QUALITY MANAGEMENT SYSTEMS – REQUIREMENTS FOR AVIATION, SPACE AND DEFENSE DISTRIBUTORS

The requirements of the AS9120, Rev. B, EN9120B and JIAQ9120B Standards have significantly changed and are based on the NEW ISO9001:2015 Standard.

This course provides the knowledge necessary to understand and comprehend the NEW requirements described in AS9120 Rev. B, Quality Management Systems – Requirements for Aviation, Space, and Defense Distributors. The course includes classroom instruction combined with class exercises to further reinforce concepts and definitions now required by the standard. The course is taught from the aviation distributor's perspective and is a must for all individuals or organizations involved in the procurement of parts, materials, and assemblies with the intent to resell these products to customers in the aviation, space, and defense industries. Attendees will receive a copy of AS9120, Rev. B, Quality Management Systems – Requirements for Aviation, Space, and Defense Distributors. This course outlines changes in the standard which impact supplier quality in areas such as: distribution, purchasing, sales, product development, service development, and repair station operations. The information presented compliments other SAE International seminars such as, *AS9100:2016 Rev D: Transitioning to the New Requirements*, or *AS9100D Internal Auditor Training*.

LEARNING OBJECTIVES

By attending this seminar, you will be able to:

- Recognize the rationale for AS9120B:2016
- Identify the purpose of the new 10-clause high-level management system structure, as it relates to AS9120B:2016
- Recognize the process approach in AS9120B:2016
- Integrate AS9120B:2916 requirements into the organization's core business processes
- Define the context of an organization
- Identify when risk, counterfeit parts, and product safety should be considered
- Identify the essential components of resources needed for compliance
- Evaluate when Clause 8.3 Design and Development of Products and Services might be applicable to and aviation, space and defense distributors
- Explain the concept of risk-based thinking in AS9120B:2016
- Assess when product safety, human factors, suspect counterfeit parts, and suspected unapproved parts should be considered when making decisions

WHO SHOULD ATTEND

This seminar is designed for aerospace quality management professionals such as: quality control and assurance managers; and product, business development, and supply chain managers.

CONTENT HIGHLIGHTS

- Recognizing the rationale for AS9120B:2016
- High level structure, Annex SL– purpose
- Major changes – ISO9001:2015
- Major changes – AS9120B:2016
- Terms and definitions – AS9120B:2016
- Process approach
- Context of the organization (Clause 4)
- Leadership (Clause 5)
- Planning (Clause 6)
- Support (Clause 7)
- Operational planning and control (Clause 8.1)
- Requirements for Products and Services (Clause 8.2)
- Design and development of products and services (Clause 8.3)
- Control of externally provided processes, products, and services (Clause 8.4)
- Production and service provision (Clause 8.5)
- Release of products and services (Clause 8.6)
- Control of nonconforming outputs (Clause 8.7)
- Performance evaluation (Clause 9)
- Improvement (Clause 10)
- Human Factors
- Managing Risk
- Transition timeline & support information

INSTRUCTOR

George J. Ringger
Industry Consultant
Adjunct Instructor of Aeronautics, Embry-Riddle Aeronautical University

I.D.# C1706

SCHEDULE
October 9-10, 2017
Farmington, Connecticut

FEES

List:	$1,505
Members	
Classic:	$1,355
Premium:	$1,279
Elite:	$1,204

TWO-DAYS/1.3 CEUS

Get the complete course description and register: training.sae.org/seminars/c1706/

NEW! FAA CERTIFICATION, OPERATIONS AND MAINTENANCE ORIENTATION

Certifying an aircraft, part or appliance can be challenging while navigating the maze of Federal Aviation Administration (FAA) procedures, rules, policies and guidelines.

This course will help you to the understand the FAA organizational structure, it's policies, guidelines and requirements leading to Type and Supplemental Type airworthiness approvals, and provide you with a competitive edge and potential reduction in time in obtaining an FAA approval. The rule-making process and rules applicable to aircraft parts and products, as well as the roles and responsibilities of the Aircraft Certification Office (ACO), Manufacturing Inspection District Office (MIDO), Flight Standards District Office (FSDO), and the Aircraft Evaluation Group (AEG) will be covered. Type and Supplemental Type Certification (TC and STC) processes and Change Product Rule for alterations and modifications to previous type certified aircraft will also be discussed. Additional topics to be covered include: FAA Enforcement, Electronic Records, the Federal Register role and the National Transportation Safety Board and how it can impact your business.

LEARNING OBJECTIVES

By attending this seminar, you will be able to:

- Define the FAA processes for certification of products
- Efficiently manage certification programs
- Describe the principles of Type Certification and Supplemental Type Certification requirements and processes
- Communicate effectively with the FAA on certification programs
- Describe the FAA system, FAA orders, Advisory Circulars, FAA rule making processes
- Identify equivalent level of safety, special conditions and exemptions
- Identify the difference between airworthiness standard and operational rules
- Explain the FAA enforcement procedures and applicant action

WHO SHOULD ATTEND

This seminar is designed for aerospace engineering professionals including: certification professionals, program managers, business development personnel, federal aviation administration inspectors/engineers, quality assurance professionals and compliance specialists. This course applies to any discipline associated with certification in areas such as: certifying products, leading/managing certification projects, regulatory impact on new business opportunities and compliance with ITAR/EAR.

CONTENT HIGHLIGHTS

- International Civil Aeronautics Organization (ICAO)
- FAA Structure, Roles, Responsibilities
- FAA Guidance
  - FAA regulatory hierarchy
  - FAR parts defined—aeronautics & space
- FAA Designees/Delegations
  - Representatives of the administrator
  - Designated Engineering Representatives (DER)
  - Designated Airworthiness Representative (DAR) & Designated Manufacturing Inspection Representative (DMIR)
  - Organization Designation Authorization (ODA)
- Type Certification Process (TCP)
  - TCP overview and types of certificates issued by FAA
  - TCP phases
- Changes in Type Design
- Issuance of Airworthiness Certificates
  - Standard airworthiness certificates
  - Special airworthiness certificates - experiential
- FAA Validation Under Bi-laterals
- Technical Standard Orders
- Flight Standards and Operations/ Maintenance
  - Organization and functions
  - Flight operations evaluation board; master minimum equipment list
  - Aviation maintenance alerts
  - Safety alert information bulletin
  - Operations approvals
- Enforcement
  - Self-disclosure
  - FAA actions
  - Certificate holder actions
- Electronica Data and Retention
- Federal Register
- Regulations.gov
- National Transportation Safety Board (NTSB) and Recommendations

INSTRUCTOR

David Downey
Consultant & Trainer, Downey Aviation Services
or
Frederick Stellar
Industry Consultant

I.D.# C1707

SCHEDULE
Future dates are planned for this course. Check the course web page for the most up-to-date information and schedule.

FEES

List:	$1,745
Members	
Classic:	$1,571
Premium:	$1,483
Elite:	$1,396

THREE-DAYS/2.0 CEUS

Get the complete course description and register: training.sae.org/seminars/c1707/

UNDERSTANDING THE FAA AIRCRAFT CERTIFICATION PROCESS

This course provides an overview of the Federal Aviation Administration (FAA) organizational structure, its policies, guidelines and requirements leading to Type and Supplemental Type airworthiness approvals. It also covers the rule-making process and rules applicable to aircraft parts and products; and defines the roles and responsibilities of the Aircraft Certification Office (ACO), Manufacturing Inspection District Office (MIDO), Flight Standards District Office (FSDO), and the Aircraft Evaluation Group (AEG). Type and Supplemental Type Certification (TC and STC) processes, and Change Product Rule for alterations and modifications to previously type certified aircraft will be discussed. FAA rule-making process will be examined including review of FAA Orders, Notices, Advisory Circulars and other guidance material.

"Overview of certification FAA rules and procedures understanding is essential to everyone working in the A/C world."

Julia Cisneros
Engineering Manager
Airbus Defense and Space Military Aircraft Inc.

LEARNING OBJECTIVES

By attending this seminar, you will be able to:

- Manage certification programs more efficiently, schedule the required milestones accordingly, and identify problems and address them promptly
- Describe the principles of Type Certification and Supplemental Type Certification requirements and process
- Converse intelligently and enter negotiations with others involved in FAA certification programs
- Describe the FAA system, FAA orders, Advisory Circulars, FAA rule making process
- Define what exemptions and special conditions are and how to obtain them
- Identify the difference between airworthiness standard and operational rules

WHO SHOULD ATTEND

This course is designed for engineering and certification managers, design engineers, airworthiness and certification engineers, quality assurance inspectors and engineers, program managers, consultants, Federal Aviation Administration designated engineering and airworthiness representatives (DER and DAR) and other technical administrative personnel involved in FAA certification activities.

CONTENT HIGHLIGHTS

- FAA History, Organization and Hierarchy
- FAA Roles and Responsibilities
- Issue Papers - What They Are and How They Are Used
  - Exemptions
  - Special conditions
  - Equivalent level of safety
- Certification Basis
- Change Product Rule
- Type Certificate Data Sheet - The "Birth Certificate" of an Airplane
- Documents and How to Develop Them
  - Airplane Flight Manual Supplements
  - Instructions for Continued Airworthiness
  - Request For Conformity
  - Certification Plan; Conformity Plans
- FAA Advisory Materials
- Support Documents
- Type and Supplemental Type Certification Process
  - Certification Plans and FAA coordination
  - Data generation and approvals
  - Conformity inspections
  - Testing
  - Approvals

INSTRUCTOR

Ken Farsi
VP of FAA Certification and Airworthiness and ODA Administrator, Dassault Aircraft Services

I.D.# C0821

SCHEDULE
October 24-25, 2017
Farmington, Connecticut

FEES

List:	$1,370
Members	
Classic:	$1,233
Premium:	$1,165
Elite:	$1,096

TWO-DAYS/1.3 CEUS

Get the complete course description and register: training.sae.org/seminars/c0821/

NEW! AS9100D:2016 AND ISO 9001:2015 EXPLAINED

This three-hour live online course will provide insights into the SAE AS9100D:2016 and ISO 9001:2015 significant changes as they adopt the common management system structure. It will include material on the standard's development process including timelines, new Common Management System Structure, AS9100D:2016 and ISO 9001:2015 Requirement Review and reference material for gap analysis and successful implementation.

LEARNING OBJECTIVES

By participating in this web seminar, you will be able to:

- Recognize the impact to new Quality Management Principles on the revision to the standards
- De-mystify the new 10-clause Common Management System structure and understand the impact on your organization
- Grasp the new language like organization and its context, interested parties, documented information, and risk-based thinking
- Realize the Aviation, Space & Defense proposed additions to understand benefits
- Gain an understanding of the SAE AS9100D:2016 and ISO 9001:2015 requirements and intent
- Define the timeline for AS9100D:2016 transition period

WHO SHOULD ATTEND

The course is designed for quality managers, management representatives, auditors, engineers, supply chain managers and other professionals.

CONTENT HIGHLIGHTS

- Standards Development Process
- New Common Management System Structure and Language
- ISO 9001:2015 and AS9100D:2016 New Requirements
- AS9100D:2016 and ISO 9001:2015 Requirement Review
- Summary

INSTRUCTOR

L.L. "Buddy" Cressionnie
Americas Aerospace Quality System Committee (AAQSC) chair and Americas leader of Requirements, Projects, and AS9100

The SAE AS9100 family of standards was developed by international aerospace industry representatives to standardize international aerospace quality management system requirements.

I.D.# WB1617

SCHEDULE
September 19-21, 2017
Live Online

December 6, 2017
(both sessions)
Live Online

FEES

List:	$425
Members	
Classic:	$383
Premium:	$361
Elite:	$340

TWO, 2-HOUR SESSIONS/.4 CEUS

Get the complete course description and register: training.sae.org/webseminars/wb1617/

FIND OUT HOW TO TRAIN YOUR WHOLE TEAM. CONTACT SAE CORPORATE LEARNING SOLUTIONS.

+1.724.772.8529
training.sae.org/corplearning

FAILURE MODES AND EFFECTS ANALYSIS (PRODUCT & PROCESS) IN AEROSPACE

This seminar introduces the participant to the analytical process by which potential failure modes, failure effects and causes of failure are identified. Engaging in a systematic method of studying failure can improve future outcomes. The severity, occurrence and probability of detection of a failure mode are used to prioritize which failure modes are most critical. Methodology is introduced for dealing with the effects of failure. The Design FMEA link to manufacturing is explained and amplified in terms of downstream Process FMEA.

LEARNING OBJECTIVES

By attending this seminar, you will be able to:

- List the benefits, requirements and objectives of an FMEA (both Product Design & Process)
- Explain the steps and methodology used to analyze a Design or Process FMEA
- Demonstrate the application of a variety of tools utilized in conjunction with performing an FMEA
- Identify corrective actions or controls and their importance in minimizing or preventing failure occurrence
- Interpret the objectives of the SAE Aerospace Recommended Practice for FMEA, ARP5580

WHO SHOULD ATTEND

This seminar is designed for the design, process assurance, reliability, test, quality, development, logistics/support or manufacturing engineer and their management; or anyone responsible for the design and development of design or manufacturing, assembly or service processes in the completion of a Design or Process FMEA.

CONTENT HIGHLIGHTS

- Introduction to FMEA
  - Design and Process FMEA - similarities and differences
  - Basic analysis methodologies
- Other Quality Tools to Aid FMEA Development
  - Class Exercises: Design FMEA; Process FMEA
- FMEA Software Overview
- FMEA and Product Liability

INSTRUCTOR

Jim Breneman
Statistical and Reliability Instructor, Mathematics Department, Tri-County Technical College

This course is based on "learning by doing" with interactive, inclass Design and Process FMEA generation and analysis in a lively team environment. This course will also detail relevant portions of the SAE Aerospace Recommended Practice for FMEA, ARP 5580 which is included in the course materials.

I.D.# C0939

SCHEDULE
September 28-29, 2017
Fort Worth, Texas–*Held in conjunction with SAE 2017 AeroTech Congress & Exhibition*

FEES

List:	$1,370
Members	
Classic:	$1,233
Premium:	$1,165
Elite:	$1,096

TWO-DAYS/1.3 CEUS

Get the complete course description and register: training.sae.org/seminars/c0939/

NEW! AS9100:2016 REV D: TRANSITIONING TO THE NEW REQUIREMENTS

This seminar is intended for Aviation, Space and Defense industry professionals who desire a detailed understanding of the requirements of AS9100 Rev. D in order to manage, implement, and perform internal audits to the standards.

Individuals responsible for quality management system, implementation, and transition to the AS9100:2016 series of standards for Aviation, Space, and Defense require an understanding of the requirements for the preparation and execution of the audit process as defined in these revised standards. Management and implementers of AS9100:2016 Rev. D within these organizations must also be aware of what these changes may mean for their company. A thorough understanding of the process approach to auditing as required by the standard and the Certification Body requirements will have a direct impact on the outcome of the QMS audit as companies look to transition their certificate to AS9100 Rev. D.

This two-day seminar begins with an in-depth review of changes in AS9100 Rev. D: Quality Management Systems - Requirements for Aviation, Space and Defense Organizations and the intent of the revised requirements. The course includes a detailed discussion of the AS9100 standard, with special emphasis on the process approach, Annex SL high level structure, risk-based thinking versus risk management, product safety, counterfeit parts, and human factors. Additionally, AS9101 Rev D: Quality Management Systems Audit Requirements for Aviation, Space, and Defense Organizations and AS9104-1: Requirements for Aviation, Space, and Defense Quality Management System Certification Programs will be examined so that individuals responsible for AS9100 Rev. D implementation understand the system and audit requirements and the immediate influence these changes have on their certificate transition.

LEARNING OBJECTIVES

By attending this seminar, you will be able to:

- Summarize the International Aviation, Space & Defense standards change process and why changes to the standards were required
- Identify key changes between AS9100 Rev. C and Rev. D and how these changes will impact an organization's certificate transition
- Identify the requirements of AS9100:2016 Rev. D with emphasis on the process approach, Annex SL high level structure, risk-based thinking versus risk management, product safety, counterfeit parts, and human factors
- Identify and understand AS9101:2016 Rev. F Audit Requirements for conducting and reporting audits and the impact these requirements will have on organizations and implementers involved in transitioning to AS9100:2016 Rev. D
- Identify key components of AS9104-1 Certification Process Overview and the influence this standard will have in the transition and certification process

WHO SHOULD ATTEND

This seminar is intended for Aviation, Space and Defense industry professionals who desire a detailed understanding of the requirements of AS9100 Rev. D in order to manage, implement, and perform internal audits to the standards. Additionally, trainers, consultants, and other individuals that maintain a significant interest in AS9100 standards will benefit from the information presented in this seminar.

CONTENT HIGHLIGHTS

- Overview of AS&D Standards
  - Rationale for changes and the revision process
- AS9100:2016 Rev D Changes Overview
- AS9100:2016 Rev D Detailed Discussion
  - Context of the Organization
  - Leadership
  - Planning
  - Support
  - Operation
  - Performance Evaluation
  - Improvement
- AS9101:2016 Rev F
  - Aviation, Space & Defense 3rd Party Auditing Focus
  - Enhanced audit processes
  - Process based management systems
  - Phases of the audit process
  - Customer focus and feedback
  - Conformity AND effectiveness
  - Forms and their impact: Non Conformity Report (NCR); Objective Evidence Record (OER); Process Effectiveness Assessment Report (PEAR)
- AS&D AS9104/1 Certification Process Overview

INSTRUCTOR

L.L. "Buddy" Cressionnie
Americas Aerospace Quality System Committee (AAQSC) chair and Americas leader of Requirements, Projects, and AS9100

I.D.# C1633

SCHEDULE
December 12-13, 2017
Puyallup, Washington

FEES

List:	$1,530
Members	
Classic:	$1,301
Premium:	$1,279
Elite:	$1,244

TWO-DAYS/1.3 CEUS

Get the complete course description and register: training.sae.org/seminars/c1633/

FIND OUT HOW TO TRAIN YOUR WHOLE TEAM. CONTACT SAE CORPORATE LEARNING SOLUTIONS.

+1.724.772.8529
training.sae.org/corplearning

COMMON TRAINING FOR DPRV PERSONNEL

Formerly *Aerospace Supplier Quality: Common Training for Self-Release Delegates,* this course provides product release delegates with a comprehensive and standardized set of requirements for the self-release process. This course is designed to cover the key elements of the process along with a detailed explanation of product-release overcheck activities. Beginning with the role and responsibility of the product release delegate and its importance to flight safety, the instructors will guide participants through the various product release activities including a review of documentation, visual inspection, dimensional overcheck, part marking and serialization, and release documentation requirements. In addition to attending and participating in the full three days, attendees must take and pass a comprehensive learning assessment to successfully complete this course.

When the ***AS13001: Common Training for DPRV Personnel*** standard is imposed from a delegating organization as a requirement, this foundations course is recognized as satisfying the respective customer training requirement for initial self-release delegate qualification. This course also aligns with the requirements of the ***AS9117: Delegated Product Release Verification*** standard.

In addition to attending and participating in the training, attendees must take and pass a comprehensive learning assessment to successfully complete this course and earn their initial DPRV qualification. This credential is conferred and tracked by Probitas Authentication, a third-party body that authenticates Aerospace Quality Management System (AQMS) auditors and training programs against specific aerospace requirements. Upon successful completion of this course and while the qualification remains valid, a product release delegate's personal qualification is recognized by all participating delegating organizations and is transferable between supplier organizations. The initial qualification is valid for a duration of three years, at which time the individual must then complete the necessary recertification training and learning assessment in order to maintain the qualification.

**This course meets the education requirements of the AS9117 standard and is considered acceptable to meet compliance guidelines set forth by the standard. Successful completion of this course merits a compliance certification from Probitas, the IAQG compliance certifying body.

LEARNING OBJECTIVES

By attending this training program, you will be able to identify and explain:

- The role of the self-release delegate
- Legal, ethics, and code of conduct
- Applicable airworthiness regulations and standards
- History of quality in the aerospace industry
- Human Factors and the importance of effective communication
- Customer requirements, flowdown, and compliance with material definition
- Key characteristics

- First article inspection reporting
- Dimensional over-inspection
- Visual inspection
- Part marking and serialization
- Nonconformance control and concession
- Subtier control
- Counterfeit, suspect, and unapproved parts awareness
- Packaging, labeling, preservation, handling, and storage
- Required documentation

WHO SHOULD ATTEND

This credentialing course is intended, as stated in AS13001, to meet the initial training requirements for designated personnel within aerospace supplier organizations that have been identified and approved as operating a product release process as a delegated activity. This course also meets the training requirement of the ***AS9117: Delegated Product Release Verification*** standard.

CONTENT HIGHLIGHTS

- Role of the Product Release Delegate
- Airworthiness Regulations and Standards
- Legal, Ethics, and Code of Conduct
- Human Factors and Importance of Effective Communication
- Quality History
- Aerospace Products
- Flight Safety
- Key Characteristics
- Customer Requirements, Flowdown, and Compliance with Material Definition
- Subtier Control
- Review Router/Traveler; OPS Complete
- First Article of Inspection Reporting
- Dimensional Over-Inspection
- Visual Inspection
- Suspect, Unapproved, and Counterfeit Parts Awareness
- Part Marking and Serialization
- Nonconformance Control and Concession
- Packaging, Labeling, Preservation, Handling, and Storage

INSTRUCTOR

There are multiple instructors for this course.

I.D.# C1501

SCHEDULE
There are multiple dates and locations scheduled for this course. Check the course web page for the most up-to-date information and schedule.

FEES
Check the couse web page for fees information.

THREE-DAYS/2.0 CEUS

Get the complete course description and register: training.sae.org/seminars/c1501/

NEW! AS9100D INTERNAL AUDITOR TRAINING

This three-day internal auditor training program is designed to provide potential and existing internal auditors with the knowledge necessary to understand and successfully audit an organization against AS9100 Rev. D: Quality Management Systems - Requirements for Aviation, Space and Defense Organizations. Additionally, attendees will participate in a detailed examination of the requirements of AS9101 Rev E: Quality Management Systems Audit Requirements for Aviation, Space, and Defense Organizations. An overview of the Standards will also be provided to identify the effect this standard has on the way internal audits should be conducted. Case studies and classroom exercises will be presented in this class to provide participants the comprehensive knowledge and practical skills necessary to be an effective internal auditor.

Internal auditors must be knowledgeable of audit requirements and the expectations as identified in the AS9100D. standard. In addition, the audit requirements outlined in the AS9101 Standard have significantly changed the way auditors are expected to conduct audits in the aviation, space and defense industries.

LEARNING OBJECTIVES

By attending this training program, you will be able to:

- Summarize the impact ISO 9000:2015 has on the application of other Standards
- Identify and explain the requirements of AS9100 Rev D including process approach, project planning, risk management, configuration management, and work transfer
- Identify and explain the key requirements of AS9101 Rev E Auditing a QMS
- Identify the basic elements of a quality management system
- Identify the tools and techniques necessary for carrying out an effective audit
- Demonstrate the knowledge and skills required to independently perform a quality management system audit
- Document the outcomes of an audit

WHO SHOULD ATTEND

This training program is designed for quality professionals in the aviation, space and defense industries who are involved in the internal audit program and/or management of quality systems seeking compliance to the AS9100D and AS9101E Standards.

CONTENT HIGHLIGHTS

- Introduction to the basics of Quality Management Systems
- ISO-9000 Overview; Terms and Definitions
- AS9100 Rev D Overview
  - Quality Management System with emphasis on the Process Approach
  - Management Responsibility with emphasis on Customer Focus
  - Understanding the new Aviation, Space & Defense 3rd Party Auditing Focus
  - Use of A9101E Audit Forms
- Auditing
  - Overview of the Audit Lifecycle
  - Audit Tools & Techniques
  - Preparing to Conduct an Audit
  - Conducting QMS Audits
  - Writing effective audit documentation
- Case Studies and Classroom Exercises
  - Overview of the Audit Lifecycle
  - Preparing to Conduct an Audit
  - Simulated Audit
  - Reporting on the Outcome of an Audit

INSTRUCTOR

Paul J. Kunder
President, Amera-Veritas, Inc.

or

Phil Klukas
Vice President, Quality Systems International

or

George Ringger
Adjunct Professor of Aeronautics,
Embry-Riddle Aeronautical University

VOLUNTEER TODAY

Want to get involved? Volunteer with SAE. Whether you have a little or a lot of time to give, there are a wide variety of projects to choose from.

Here's how it works:

• Go to the Member Connection at connection.sae.org & select the "Volunteer" tab at the top

• View the entire volunteer list and sign up for those of interest to you

• You can also opt into the volunteer pool to be matched with opportunities based on the criteria provided and receive alerts on future openings

I.D.# C1634

SCHEDULE
September 27-29, 2017
Warrendale, Pennsylvania

FEES

List:	$2,030
Members	
Classic:	$1,827
Premium:	$1,726
Elite:	$1,624

THREE-DAYS/2.3 CEUS

Get the complete course description and register:
training.sae.org/seminars/c1634/

FIND OUT HOW TO TRAIN YOUR WHOLE TEAM. CONTACT SAE CORPORATE LEARNING SOLUTIONS.

+1.724.772.8529
training.sae.org/corplearning

NEW! AVIATION SAFETY ENGINEER JOB FUNCTIONS

The skills and knowledge gained in this workshop enables you to carry out regulatory responsibilities related to the administration of the Aircraft Certification and Continued Operational Safety. This course content provides the Civil Aviation Safety Engineers (Systems – Electrical) with the knowledge and skills to conduct oversight of aviation safety, aircraft certification and Continued Operational Safety. These areas of responsibility include, but are not limited to, Type Certification, Amended Type Certification, Supplemental Type Certification, Parts Manufacturing Approval (PMA), Technical Standard Order (TSO) Continued Operational Safety, Flight manuals, and Operational Approvals.

The workshop's emphasis will be on Aircraft Certification activities as well as Continued Operational Safety tasks. With the goal of enabling you to provide regulatory oversight for the engineering certification activities for which you are responsible. In addition, you receive specific training on job functions for mechanical and electrical systems.

This seminar is designed for aerospace engineering roles such as: certification engineers, certification technicians, engineering leadership, program managers, and business development personnel.

LEARNING OBJECTIVES

By attending this seminar, you will be able to:

- Comprehend the FAA processes for certification of products
- Efficiently manage certification programs
- Describe the principles of Type Certification and Supplemental Type Certification requirements and process
- Communicate effectively with the FAA on certification programs
- Describe the FAA system, FAA orders, Advisory Circulars, FAA rule making process
- Identify Equivalent Level of Safety, Special Conditions and Exemptions
- Identify the difference between airworthiness standard and operational rules
- Explain the FAA Enforcement procedures and applicant action

WHO SHOULD ATTEND

This course applies to any discipline associated with certification in areas such as: certifying products, testing, leading/managing certification projects and regulatory impact on new business opportunities. The information presented in this seminar builds on the content of the SAE courses *FAA Certification, Operations & Maintenance Orientation* (ID# C1707) and *FAA Part 21 Certification Procedures for Products and Parts* (ID# C1701) but goes beyond certification into operations and maintenance activities in greater detail.

CONTENT HIGHLIGHTS

- Who We Are; What We Do; Why We're Here
- Airworthiness Certification Training
- FAA Structure, Roles, Responsibilities
  - Acronyms
  - Overall Structure
  - Aircraft Certification Service
  - Directorate
- FAA Guidance
  - FAA Regulatory Hierarchy
  - FAR Parts Defined – Aeronautics & Space
  - FAR Parts Governing Certification & Continued Airworthiness of Rotorcraft
  - FAR Parts 23, 25, 27 & 29
  - Advisory Circulars Pertaining Certification & Continued Airworthiness
  - Directives Pertaining Certification & Continued Airworthiness
- FAA Designees/Delegations
  - Representatives of the Administrator
  - Designated Engineer Representatives (DER)
  - Designated Airworthiness Representative (DAR) & Designated Manufacturing Inspection Representative (DMIR)
  - Organization Designation Authorization (ODA)
- Type Certification Process
  - TCP Overview; TCP Phase I, Phase II, Phase III, & Phase IV
- Changes in Type Design
- Issuances of Airworthiness Certificates
- FAA Validation Under Bi-laterals
- Technical Standard Orders
- ASE Job Function
  - Subpart Breakdown
  - Applicable Paragraphs
  - Engineering Disciplines
  - Certification Tools
  - Systems & Equipment ACs/Dos/Orders/ Job Aids
  - Operations Approvals
  - Simulator Qualifications
  - Lithium Battery Special Conditions
  - E-Enabled Operations Approval

INSTRUCTOR

David Downey
Consultant & Trainer, Downey Aviation Services
or
Fred Stellar
Director of Certification, Airbus Helicoptors Inc.

I.D.# C1708

SCHEDULE
October 13-16, 2017
Dallas, Texas

FEES

List:	$2,175
Members	
Classic:	$1,958
Premium:	$1,849
Elite:	$1,740

FOUR-DAYS/2.6 CEUS

Get the complete course description and register: training.sae.org/seminars/c1708/

AIRCRAFT CABIN SAFETY AND INTERIOR CRASHWORTHINESS

The certification of transport category cabin interiors requires a thorough understanding of Part 25 Transport Category aircraft cabin interior safety and crashworthiness regulations and compliance requirements. Regardless of whether it is a simple modification, a specialized completion (VIP or VVIP) or airline passenger configuration, engineers, designers, and airworthiness personnel must understand and adhere to these requirements.

Regardless of whether it is a simple modification, a specialized completion (VIP or VVIP) or airline passenger configuration, engineers, designers, and airworthiness personnel must understand and adhere to Part 25 Transport Category requirements.

This seminar begins with a discussion of Commercial off the Shelf (COTS) test requirements. The instructor then guides you through the various cabin interior emergency provisions and their requirements including: supplemental passenger oxygen, emergency equipment, seats, flammability, emergency exits, emergency lighting and escape path markings, and various other cabin interior systems. Additionally, DO-160 environmental, cooling and ventilation requirements are discussed to provide you a comprehensive introduction to cabin interior safety and crashworthiness requirements as specified in the CFR Part 25 Airworthiness Standards.

LEARNING OBJECTIVES

By attending this seminar, you will be able to:

- Identify key strategies to managing certification programs effectively
- Recognize cabin safety and design problems in a timely manner so they may be addressed in advance
- Communicate intelligently on the requirements and effectively negotiate with others involved in FAA certification programs
- Interpret and identify the reasoning behind cabin safety rules and regulations
- Demonstrate an understanding of cabin safety and crashworthiness regulations
- Examine and evaluate current cabin safety issues and their solutions through open discussions between instructor and attendees

WHO SHOULD ATTEND

This course is designed for engineering and certification managers, design engineers, airworthiness and certification engineers, program managers, consultants, Federal Aviation Administration designated engineering representatives (DER) interested in gaining interior arrangement authorization added to their delegated functions and authorized areas, and other technical and administrative personnel involved in FAA certification activities.

CONTENT HIGHLIGHTS

- Introduction to Part 25 Airworthiness Standards Requirements
- Commercial Off The Shelf equipment (COTS) and Super COTS
- Galleys
- Passenger Oxygen and Oxygen Masks
- Emergency Equipment
- Seats
- Beds
- Latches and Secondary Latches
- Placards
- Flammability
- Smoke Detection and Penetration for Cabin Accessible Baggage Compartments
- Emergency Exit Types and Requirements
- Exit Signs and Requirements
- Aisle Clearance Requirements
- Exit Passageways
- Emergency Lighting Systems
- Crew Areas
- Flight Deck Door
- Cabin Doors and Curtain Dividers
- Ordinance Signs
- Cross Aisle Visibility
- Passenger Address (PA) System
- Cabin Hand Sets and Egress Issues
- EMI/RFI Tests
- DO-160 Environmental, Cooling and Ventilation Requirements
- Lithium Ion batteries
- Water systems

INSTRUCTOR

Ken Farsi
VP of FAA Certification and Airworthiness and ODA Administrator, Dassault Aircraft Services

GET SAE TRAINING AND EDUCATION DELIVERED TO YOUR LOCATION

Most SAE seminars, workshops, and web seminars are available for on-site delivery. Corporate Learning Solutions from SAE International brings training seminars to your location and adds a customized approach to address your specific business needs.

+1.724.772.8529 • training.sae.org/corplearning

I.D.# C0926

SCHEDULE
October 26-27, 2017
Farmington, Connecticut

FEES

List:	$1,370
Members	
Classic:	$1,233
Premium:	$1,165
Elite:	$1,096

TWO-DAYS/1.3 CEUS

Get the complete course description and register:
training.sae.org/seminars/c0926/

FIND OUT HOW TO GET THIS COURSE DELIVERED TO YOUR LOCATION. CONTACT SAE CORPORATE LEARNING SOLUTIONS.
+1.724.772.8529
training.sae.org/corplearning

UNDERSTANDING AND SUPPORTING AIRCRAFT ACCIDENT INVESTIGATION AND RECONSTRUCTION

This course begins with the basic requirements for conducting proper accident investigations, including investigative philosophies and procedures. The instructor guides you through various data gathering methods and covers several specific types of accident investigations including those related to human factors, crashworthiness, inflight breakups, and mid-air collisions. Presentations are based on actual accidents and investigation experiences. The course integrates accident investigation case studies throughout to provide the knowledge required to effectively support aircraft accident investigation and reconstruction.

LEARNING OBJECTIVES

By attending this seminar, you will be able to:

- Identify the key requirements and steps in the AAI process
- Identify and evaluate analytical procedures used in an AAI
- Identify and analyze potential complications that arise during an AAI
- Construct and contribute analysis in support of an AAI

WHO SHOULD ATTEND

Individuals seeking a fundamental understanding of the aircraft accident investigation and reconstruction process, particularly those who may be called on to serve in a role as a technical advisor on an official investigation team.

CONTENT HIGHLIGHTS

- Investigative Attitudes and Behaviors
- Approach to an Investigation
- Basic Analytical Procedures
- Results of Incomplete Investigation Processes
- Human Factors Analysis
- Aging Aircraft
- Witness Interviews
- Photo Documentation
- In-Flight Breakups
- Crashworthiness & Survivability
- Mid-Air Collisions
- Exercises: Nine-Box Matrix & Wreckage Reconstruction

INSTRUCTOR

Donald F. Knutson
President, Knutson Aviation Services

For individuals called upon to serve as advisors or technical representatives to official aircraft accident investigation (AAI) teams, an understanding of aircraft accident investigation and reconstruction methodology and and processes is critical to success in this supportive role.

I.D.# C1143

SCHEDULE
September 28-29, 2017
Fort Worth, Texas–*Held in conjunction with SAE 2017 AeroTech Congress & Exhibition*

FEES

List:	$1,370
Members	
Classic:	$1,233
Premium:	$1,165
Elite:	$1,096

TWO-DAYS/1.3 CEUS

Get the complete course description and register: training.sae.org/seminars/c1143/

SAE International offers a series of on demand training courses from CALISO to aerospace and automotive engineers worldwide. The twenty-one on demand courses for international standards also include training on corporate governance best practices and business management strategy.

WHAT YOU WILL RECEIVE

- With each registration, you receive on demand access to the course for up to three years
- Integrated knowledge checks to reinforce key concepts
- The downloadable course materials
- Proof of participation as part of your transcript

GOOD LABORATORY PRACTICES (GLP) TRAINING

GLP refers to a Quality Systems of management controls for laboratories and research organizations to ensure the consistency and reliability and reproducibility of results. Your company, and all who partake in the daily activities of running a laboratory or a research and testing center, will benefit from this course. This GLP overview is particularly adapted for training all levels of an organization on the requirements of this standard.
training.sae.org/caliso/glp.htm

ISO 9001 OVERVIEW

ISO 9001 is a quality management standard developed by the International Organization for Standardization (ISO). The ISO 9001 standard, because it is business and management oriented, can be applied to any activity. It is the most widely used quality management standard in the world. ISO 9001 Overview is particularly adapted for training top management on the high level requirements. **training.sae.org/caliso/iso9001-overview.htm**

ISO 9001:2008 TRAINING

ISO 9001 is the most widely used quality management standard in the world. Fairly generic, it can be used for organizations providing physical products or services. All who partake in the daily activities of running the business will benefit from ISO 9001:2008 Training as it is particularly adapted for training all levels of an organization on the requirements of this standard. **training.sae.org/caliso/iso9001-training.htm**

ISO 9001:2008 AUDITOR TRAINING

The eight-hour (.8 CEU) ISO 9001 Auditor course provides training on the standard itself and on how to lead or conduct internal audits and supplier audits using ISO 19011, the guideline standard on how to audit management systems. **training.sae.org/caliso/iso9001-auditor.htm**

ISO 9001:2008 LEAD AUDITOR

Your company and all who partake in planning, leading and conducting the audit activities of running the business will benefit from taking ISO 14001 Auditor training. ISO 9001:2008 Lead Auditor provides training on the standard itself and on how to lead or conduct internal audits and supplier audits using ISO 19011. **training.sae.org/caliso/iso9001la.htm**

ISO 14001:2004 TRAINING

ISO 14001 is the most widely used EMS standard in the world. Fairly generic, it can be used for any organization providing physical products or services. The requirements must be carefully interpreted to make sense within a particular organization. All who partake in the daily activities of running the business will benefit from taking ISO 14001:2004 Training as it is adapted for all members of the organization. **training.sae.org/caliso/iso14001-training.htm**

ISO 14001:2004 AUDITOR TRAINING

This ISO 14001:2004 Auditor course is the most comprehensive training on the subject. It provides training on the standard itself but also on how to conduct internal audits and supplier audits using ISO 19011, the guideline standard on how to audit management systems. **training.sae.org/caliso/iso14001-auditor.htm**

ISO 14001:2004 LEAD AUDITOR

The ISO 14001:2004 Lead Auditor course is the most comprehensive training on the subject. It provides training on the standard itself but also on how to lead or conduct internal audits and supplier audits using ISO 19011, the guideline standard on how to audit management systems. **training.sae.org/caliso/iso14001-leadauditor.htm**

ISO/TS 16949:2009 TRAINING

The ISO/TS16949 is an ISO technical specification for the automotive industry aiming to the development of a quality management system that provides for continual improvement, emphasizing defect prevention and the reduction of variation and waste in the supply chain. All who partake in the daily activities of running the business will benefit from this ISO/TS 16949 (.8 CEU) overview, adapted for training all levels of an organization on the requirements of this standard. **training.sae.org/caliso/iso16949-training.htm**

ISO/TS 16949:2009 AUDITOR TRAINING

The ISO/TS 16949:2009 Auditor Training course is the most comprehensive training on the subject. It provides training on the standard itself but also on how to lead or conduct internal audits and supplier audits using ISO 19011, the guideline standard on how to audit management systems. **training.sae.org/caliso/iso16949-auditor.htm**

ISO/TS 16949:2009 LEAD AUDITOR TRAINING

This lead auditor course provides management representatives, QA managers or supervisors and others not only the information needed to conduct an audit for ISO/TS 16949, but also to organize, implement and lead it. All audit teams need a leader, and the body of knowledge of this course covers all of the lead auditing aspects.
training.sae.org/caliso/iso16949-leadauditor.htm

ISO 19011:2011 AUDITOR TRAINING

All who partake in the daily activities of running the business will benefit from taking ISO 19011 training for its auditing activities. This ISO 19011:2011 Auditor Training course provides training on the standard itself but also on how to lead or conduct internal audits and supplier audits using ISO 19011, the guideline standard on how to audit management systems.
training.sae.org/caliso/iso19011-training.htm

ISO 9001:2015 OVERVIEW

The ISO 9001:2015 standard is generic and can be used for any organization, whether it provides physical products or services. The requirements must be carefully interpreted to make sense within a particular organization. This 4-hour ISO 9001:2015 overview is particularly adapted for training top management on the high level requirements of this standard.
training.sae.org/caliso/iso9001-2015-overview.htm

ISO 9001:2015 TRAINING

The ISO 9001:2015 standard is generic and can be used for any organization but the requirements must be carefully interpreted to make sense within a particular organization. Your company and all who partake in the daily activities of running the business will benefit from taking this ISO 9001:2015 course as it is particularly adapted for training all levels of an organization on the requirements of the standard.
training.sae.org/caliso/iso9001-2015-training.htm

ISO 9001:2015 AUDITOR TRAINING

The ISO 9001:2015 standard is generic and can be used for any organization but the requirements must be carefully interpreted to make sense within a particular organization. The most comprehensive training on the subject, ISO 9001:2015 Auditor Training provides training on the standard itself but also on how to lead or conduct internal audits and supplier audits using ISO 19011. **training.sae.org/caliso/iso9001-2015-auditor.htm**

ISO 9001:2015 LEAD AUDITOR

Fairly generic, the ISO 9001:2015 standard can be used for any organization but the requirements must be carefully interpreted to make sense within a particular organization. The most comprehensive course on the subject, ISO 9001:2015 Lead Auditor Training benefits all who partake in planning, leading and conducting the audit activities of the business.
training.sae.org/caliso/iso9001-2015-la.htm

ISO 14001:2015 OVERVIEW

ISO 14001 is the most widely used EMS standard in the world. Fairly generic, it can be used for any organization providing physical products or services. The requirements must be carefully interpreted to make sense within a particular organization. All who partake in the business activities of your organization will benefit from the ISO 9001:2015 Overview course but it is particularly adapted for training top management on the high level requirements of this standard. **training.sae.org/caliso/iso14001-2015-overview.htm**

ISO 14001:2015 TRAINING

All who partake in the business activities of your organization will benefit from the ISO 9001:2015 Overview course as it is particularly adapted for all members of the organization.
training.sae.org/caliso/iso14001-2015-training.htm

ISO 14001:2015 AUDITOR TRAINING

This ISO 14001:2015 Auditor course is the most comprehensive training on the subject. It provides training on the standard itself but also on how to conduct internal audits and supplier audits using ISO 19011, the guideline standard on how to audit management systems.
training.sae.org/caliso/iso14001-2015-auditor.htm

ISO 14001:2015 LEAD AUDITOR

The ISO 14001:2015 Lead Auditor course is the most comprehensive training on the subject. It provides training on the standard itself but also on how to lead or conduct internal audits and supplier audits using ISO 19011, the guideline standard on how to audit management systems. **training.sae.org/caliso/iso14001-2015-la.htm**

SEE THE FULL COURSE LIST AT training.sae.org/caliso/

Enrich your professional development with these related aerospace technology resources from SAE.

BOOKS

COMPOSITE MATERIALS HANDBOOK VOLUME 1. POLYMER MATRIX COMPOSITES: GUIDELINES FOR CHARACTERIZATION OF STRUCTURAL MATERIALS

Volume 1 contains guidelines for determining: properties of polymer matrix composite material systems and their constituents; properties of generic structural elements, including test planning, sampling, conditioning, test procedure selection, data reporting, statistical analysis; and other topics.

COMPOSITE MATERIALS HANDBOOK VOLUME 2. POLYMER MATRIX COMPOSITES: MATERIALS PROPERTIES

Volume 2 contains statistically-based data for polymer matrix composites that meets specific CMH-17 population sampling and data documentation requirements, covering material systems of general interests.

COMPOSITE MATERIALS HANDBOOK VOLUME 3. POLYMER MATRIX COMPOSITES: MATERIALS, USAGE, DESIGN, AND ANALYSIS

Volume 3 provides methodologies and lessons learned for the design, analysis, manufacture, and field support of fiber-reinforced, polymeric-matrix composite structures. It also provides guidance on material and process specifications and procedures for using the data that is presented in Volume 2.

INTEGRATED VEHICLE HEALTH MANAGEMENT: PERSPECTIVES ON AN EMERGING FIELD

Unique and groundbreaking - this book addresses both basic and advanced concepts critical for the understanding and support of the developing field of Integrated Vehicle Health Management (IVHM). This book represents the collective voice of the most qualified authorities in the field and serves as the perfect introduction to IVHM engineering professionals, academia, and students.

STANDARDS/PAPERS/SUBSCRIPTIONS

ACTIVE AND BATTERY ASSISTED RFID TAGS INTENDED FOR AIRCRAFT USE

NOW AVAILABLE! Provides guidance for the certification of Active RFID tags to meet the criteria established in the FAA Advisory Circular AC No: 20-162 - AIRWORTHINESS APPROVAL AND OPERATIONAL ALLOWANCE OF RFID SYSTEMS 09/22/08

RELIABILITY PREDICTION FOR AUTOMOTIVE ELECTRONICS BASE ON FIELD RETURN DATA - J3083

This Recommended Practice (RP) document provides guidance on performing reliability predictions for automotive electronic products utilizing field return data or any other types of failure data available to an automotive electronics supplier.

.

SAE AEROSPACE QUALITY STANDARDS SUBSCRIPTION

SAE Aerospace Quality Standards is a collection of critical documents published by key aerospace standards groups. Widely accepted by the aerospace industry, this collection of standards provides tools for continuous improvement to help manufacturers and suppliers remain compliant and deliver the quality that customers demand. The newly expanded subscription now contains 73 current standards.

EVENTS

SAE 2017 COMMERCIAL VEHICLE ENGINEERING CONGRESS

September 18-20, 2017
Rosemont, Illinois, USA

SAE COMVEC is back and better than ever. Get full access to three symposia diving into the industry's hottest topics–Data Driven Decisions in Industry, Efficiency Improvements for Commercial Vehicles, and Aerodynamics. COMVEC 17 is the central forum for the breadth of on- and off-highway heavy vehicles.

SAE 2017 AEROTECH CONGRESS & EXHIBITION

September 26-28, 2017
Fort Worth, Texas, USA

Biennially, thousands of the world's top aerospace professionals gather at the essential aerospace event where the aerospace community prepares for future challenges and opportunities. This exclusive event provides an invaluable opportunity for attendees to renew and develop important business relationships within the international aerospace industry.

DOD MAINTENANCE SYMPOSIUM

December 4-7, 2017
Salt Lake City, Utah, USA

2017 Theme: Maintaining the Joint Force Competitive Advantage through Innovative, Agile, and Adaptive Capabilities. This event creates an environment that enables you to share relevant information, identify critical issues, discuss key topics, and increase awareness of Department of Defense maintenance initiatives. You have the unique opportunity to influence the future of the maintenance community. Here, your voice will be heard. Join military, government and industry leaders, and maintainers from all levels at this distinctive, first class event—the maintenance community's primary venue for networking and content sharing.

JOURNALS

SAE INTERNATIONAL JOURNAL OF AEROSPACE

This Journal is an essential resource for anyone in academia, industry, and government seeking the latest studies and technology in aerospace engineering. In addition to being identified as some of the best published technical papers on current technology, the Journal archives historic findings and also illuminates the future of aerospace engineering and how we plan to get there.

Learn more about these aerospace technology related products at go.sae.org/aero_tech_resources

2017 AERO TECHNOLOGY LIVE LEARNING SCHEDULE

for the most up-to-date and complete schedule, visit training.sae.org/calendar/

Troy, MI, USA – SAE International Troy Office

Sep 21-22	Accelerated Test Methods for Ground and Aerospace Vehicle Development – I.D.# C0316
Sep 25-26	Engineering Project Management – I.D.# 99003

Warrendale, PA, USA – SAE International Warrendale Office

Sep 27-29	New! AS9100D Internal Auditor Training– I.D.# C1633

Ft. Worth, TX, USA – Ft. Worth Convention Center—In conjunction with the SAE 2017 AeroTech Congress & Exhibition

Sep 28	Introduction to Composites Fabrication and Assembly in Aerospace, Space, and Transportation – I.D.# C1311
Sep 28-29	Failure Modes and Effects Analysis (Product & Process) in Aerospace – I.D.# C0939
Sep 28-29	Understanding and Supporting Aircraft Accident Investigation and Reconstruction – I.D.# C1143
Sep 28-29	ARP4754A and the Guidelines for Development of Civil Aircraft and Systems – I.D.# C1118
Sep 28-29	New! Applying DO-254 for Avionics Hardware Development and Certification – I.D.# C1703
Sep 28-29	Fundamentals of GD&T 2009 – I.D.# ET2053
Sep 29-30	Automated Systems for Aerospace and Space Applications – I.D.# C1313

Live Online

Sep 8-25	Fundamentals of Geometric Dimensioning & Tolerancing (GD&T) – I.D.# WB0933
Sep 19-21	New! AS9100D:2016 and ISO 9001:2015 Explained – I.D.# WB1617

Shanghai, China – SAE International China Office

Sep 19-20	New! Critical Concepts of Tolerance Stacks – I.D.# ET1701

Warrendale, PA, USA – SAE International World Headquarters

Sep 27-29	New! AS9100D Internal Auditor Training – I.D.# C1634

Troy, MI, USA – SAE International Troy Office

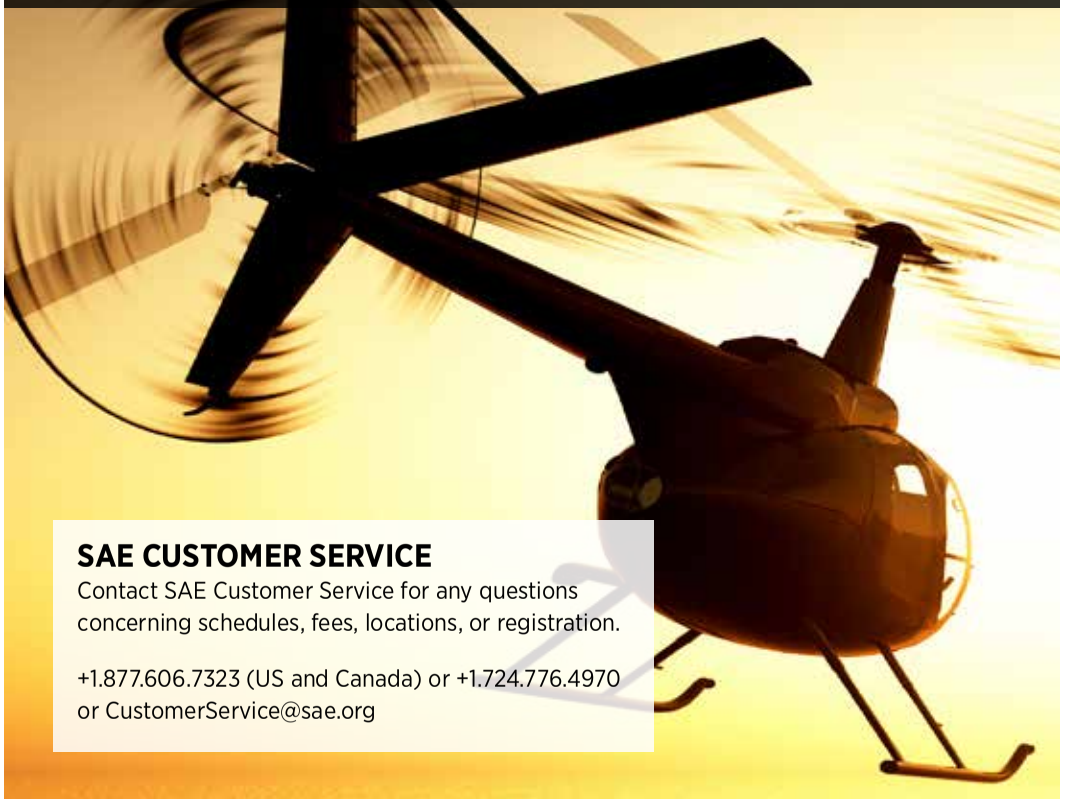
Oct 5-6	Leading High Performance Teams – I.D.# C0410
Oct 10-11	Introduction to Advanced High Strength Steel Applications and Manufacturing – I.D.# C1416
Oct 10-11	Evaporative and Refueling Emission Control – I.D.# C0928
Oct 12-13	Corrosion Engineering and Prevention – I.D.# C1217
Oct 12-13	Acquiring and Analyzing Data from Sensors and In-Vehicle Networks – I.D.# C0522
Oct 16-17	New! Cybersecurity: Introduction to Embedded System Exploitation – I.D.# C1524
Oct 18-19	New! Cybersecurity: Software Assurance - Input Validation – I.D.# C1521
Oct 19-20	Design Review Workshop – I.D.# C1306
Oct 26	Safe Handling of High Voltage Battery Systems – I.D.# C1019
Oct 30-31	The Basics of Internal Combustion Engines – I.D.# C0103
Oct 30-Nov 1	Strategic Leadership – I.D.# C0620

Livonia, MI, USA – Effective Training Inc.

Oct 25-27	Fundamentals of GD&T 2009 - 3-day Public Workshop – I.D.# ET1151
Oct 30-31	Applications of GD&T 2-Day Workshop – I.D.# ET2512

To help you better plan your training, we schedule live course offerings as far in advance as possible. The content in this resource guide reflects the most accurate information available at the time of publication. Rarely, unforeseen circumstances may force a change to the schedule. Early registration ensures that you not only have a spot in your selected course but are notified of any changes. For the most-up-to-date listing of scheduled courses, visit **training.sae.org/calendar/**. SAE International reserves the right to cancel offerings and cannot be held responsible for costs incurred beyond registration fees.

AEROSPACE TECHNOLOGY
EDUCATION & TRAINING GUIDE



SAE CUSTOMER SERVICE

Contact SAE Customer Service for any questions concerning schedules, fees, locations, or registration.

+1.877.606.7323 (US and Canada) or +1.724.776.4970
or CustomerService@sae.org

SAE INTERNATIONAL®

400 Commonwealth Drive
Warrendale, PA 15096

Non-Profit Org.
U.S. POSTAGE
PAID
Pittsburgh, Pa.
Permit No. 1731

P17143300