Aircraft Lightning: Requirements, Component Testing, Aircraft Testing and Certification (AERO0070)

Instructor: C. Bruce Stephens, Kenneth C. Darbonne, Darren L. Stout
(This course may be taught by any of these instructors.)

Course Highlights

- The electromagnetic environment of the aircraft
- Metallic and composite aircraft requirements
- The history of lightning requirements for aircraft certification
- Direct and indirect effects of lightning testing
- FAA compliance for lightning effects

Course Description

This course provides details for direct and indirect effects of aircraft lightning testing and certification. Requirements for both composite and metallic aircraft, including proper RTCA/DO-160 classifications, are examined. The course will also include a high-level overview of Electromagnetic Compatibility (EMC), High-Intensity Radiated Fields (HIRF), Precipitation Static (P-Static) and Electrical Bonding requirements. The new requirements of Electrical Wiring and Installation System (EWIS) and Fuel Tank Safety (14 CFR 25.981 Amd. 102) will also be addressed.

Who Should Attend?

This course is designed for all design engineering disciplines, project managers, project engineers and laboratory personnel whose aircraft system may require protection from the effects of lightning.

Learning Objectives

- FAA certification process and requirements
- Direct effects of lightning criticalities
- RTCA/DO-160 levels for direct effects testing
- Indirect effects of lightning
Course Outline

Day One

- Introduction
- The electromagnetic environment of aircraft
- Metallic and composite aircraft requirements
- Electromagnetic Interference (EMI)
- Electromagnetic Compatibility (EMC)
- Electrical bonding
- Electrostatic Discharge (ESD)
- Prescription Static (P-STATIC)
- High Intensity Radiated Fields (HIRF)
- FAA certification process and requirements

Day Two

- The lightning environment
- The history of lightning requirements for aircraft certification
- Aircraft lightning attachment
- Effects of lightning on aircraft
- Directs effects of lightning
- Direct effects testing
- RTCA/DO-160 levels for direct effects testing
- Direct effects certification requirements
- EASA requirements
- Simulation for direct effects requirements

Day Three

- Indirect effects of lightning
- Indirect effects aircraft level testing
- Indirect effects design
- RTCA/DO-160 levels for indirect effects bench testing
- Indirect effects certification requirements
- EASA requirements
- Simulation for indirect effects requirements
Day Four

- Fuel systems
- 14 CFR 25.981, Amendment 102
- Aircraft wiring and shielding
- Electrical Wiring and Installation System (EWIS)

Day Five

- Pre-selected teams will simulate the process of determining aircraft lightning certification and testing requirements for various components installed on the aircraft.
- Electromagnetic Effects (EME) program management
- Future EME testing techniques; Final EME discussion and questions

Classroom hours / CEUs
31.50 classroom hours
3.15 CEUs

Certificate Track
Aerospace Compliance, Avionics and Avionic Components, Electromagnetic Effects

Course Fees
Early registration fee: $2,495 if you register and pay by the early registration deadline (45 days out).

Regular registration fee: $2,695 if you register and pay after the early registration deadline.

U.S. Federal Employee Discount
This course is available to U.S. federal employees at 10% off the registration fee. To receive the federal employee discount, you must enter the code FGVT116 during the checkout process. Please note that you must validate your eligibility to receive this discount by entering your U.S. government email address (ending in .gov or .mil) when creating your online registration profile. This discount is available for both the early registration and regular registration fees.

Netherlands Defence Academy Discount
This course is available to Netherlands Defence Academy employees at a discounted registration fee. Please contact the NDA Procurement and Contracting department for details. Please note that you cannot register using our online system when requesting this discount.
This class is available for delivery at your company.
Your company can realize substantial savings by bringing an aerospace short course to your workplace. On-site delivery is ideal for organizations that need to train 10 or more employees on a specific topic. For more information on on-site course delivery, or to request a cost proposal, please contact us at 913-897-8782, or email us at ProfessionalPrograms@ku.edu.

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