

AEROSPACE

SHORT COURSES

Software Safety, Certification and DO-178C (AERO0470)

Instructor: Jeff Knickerbocker

Course Description

This course provides the fundamentals for developing and assessing software to the standard RTCA DO-178B and DO-178C Software Considerations in Airborne Systems and Equipment Certification, as well as associated RTCA DO-178C supplements in DO-330, DO-331, DO-332 and DO-333. Similarities and differences to RTCA DO-278A for CNS/ATM equipment will also be addressed. The course also provides insight into the FAA's software review process, the FAA's software policy, practical keys for successful software development and certification, common pitfalls of software development, and software challenges facing the aviation community. Practical exercises and in-class activities will further enhance the learning process.

Course Highlights

- Differences between DO-178B and DO-178C
- DO-178C supplemental documents and where they fit
- Overview of existing standards related to software safety
- Configuration management
- Development and integration/test processes
- Verification processes
- Quality assurance objectives
- Supplements
- Assessing compliance - the Software Job-Aid
- Planning process
- Common pitfalls
- Software challenges facing the aviation industry

Who Should Attend?

This course is designed for software developers, avionics engineers, systems integrators, aircraft designers and others involved in development or implementation of safety-critical software. The focus is on civil aviation, certification and use of RTCA DO-178C; however, the concepts may be applicable for other safety domains, such as military, medical, nuclear and automotive.

Learning Objectives

- Develop and document efficient RTCA/DO-178C and DO-278A compliant processes
- Create, capture and implement compliant requirements, design data and source code
- Evaluate compliance to RTCA/DO-178C and understand the how to integrate DO-178C supplements
- Generate and adhere to effective verification strategies
- Understand FAA’s software-related policy and guidance

Course Outline

Day One

- Introductions and background
- Differences between DO-178B and DO-178C
- DO-178C supplemental documents and where they fit
- Overview of existing standards related to software safety
- Tie between the system, safety and software processes
- History, purpose, framework and layout of DO-178C
- Reading the Annex A Tables
- Configuration management, configuration management objectives and terminology, control categories

Day Two

- Development and integration/test processes—development objectives, high-level requirements, traceability, design (low-level requirements and architecture), code/integration, integration/test objectives, normal and robustness testing
- Verification processes—overview of verification, verification of requirements, design, code and testing

Day Three

- Quality assurance (QA) objectives, QA philosophy, SQA approaches, certification liaison objectives, life cycle data
- Supplements including DO-330—Tool Qualification, DO-331—Model Based Development, DO-332—Object Oriented, and DO-333—Formal Methods
- Special topics—partitioning and protection, structural coverage, dead and deactivated code, service history, Commercial-Off-The-Shelf (COTS) software FAA software-related policy and guidance—software review process, user-modifiable and field-loadable software, change impact analysis, tool qualification, previously developed software, software reuse, integrated modular avionics, databases (DO-200A), complex hardware (DO-254)

Day Four

- Assessing compliance—the Software Job-Aid
- Planning process
- Common pitfalls

- Software challenges facing the aviation industry: off-shore development, use of real-time operating systems and other commercially available components, software reuse

Classroom hours / CEUs

28.00 classroom hours

2.8 CEUs

Certificate Track

Aerospace Compliance

Avionics and Avionic Components

Course Fees

Early registration course fee: \$2,295 if you register and pay by the early registration deadline (45 days out).

Regular registration course fee: \$2,495 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.

Canada Department of National Defence Discount

This course is available to Canada DND employees at 10% off the registration fee. Please contact the DND Procurement Authority (DAP 2-3) for details. Please note that you cannot register using our online system when requesting this discount. 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.

Instructor Bio

Jeff Knickerbocker is a consulting DER with 30+ years of experience as a systems/software engineer. He has led technical teams in designing, developing and verifying real-time embedded software and AEH devices. In addition to industry affiliations, he also provides consulting and training services to the FAA and other non-U.S. regulatory agencies. In 2002, he and his wife started Sunrise Certification & Consulting. Knickerbocker has a B.S. in physics and an M.S. in software engineering.

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.

CONTACT US:

KU Lifelong and Professional Education
Aerospace Short Course Program
12600 Quivira Road, RC 125
Overland Park, Kansas 66213
Email: ProfessionalPrograms@ku.edu
Phone: 913-897-8530 (Registration)