Composite Structural Engineering Technology (CSET) Course

October 17, 2016 - February 5, 2017
(Hands on Lab - Nov 8-9, 2016)

In this course students will:

• Learn the framework for certification and substantiation of composite aircraft structure.

• Focus on civil aircraft, with topics that include engineering, manufacturing, maintenance and certification requirements.

• Through on-line discussions, Interface with expert structural engineers from industry and the FAA throughout the online class.

• Apply course principles in a hands-on laboratory to practice principles of engineering, manufacturing and maintenance of composite structures.

• Receive a certificate of completion upon successfully meeting course requirements
Course Description

This course covers the essential topics pertaining to composites engineering. Its contents provide students with composites engineering process framework through course materials and practical applications through online discussions. Topics include engineering, manufacturing, maintenance, and certification of composite materials associated with civil aircraft structures. The course is organized in accordance with FAA AC 20-107B (Composite Aircraft Structure) and emphasizes various safety issues related to composite materials and structures.

This course was developed through the collaboration of Wichita State University, industry subject matter experts and the FAA. The course is taught online, includes all teaching materials and features real-world discussions facilitated by subject matter experts and FAA representatives. Depending on prior knowledge and experience, students will spend up to ten hours per week reviewing materials, participating in online discussions and testing their knowledge. A two-day hands-on lab is provided in Wichita, Kansas.

After finishing a one-week period of self-study of fundamental composites and successfully completing an examination, students proceed to more advanced topics through an on-line, interactive learning experience via Blackboard. Teaching methodology includes online discussions facilitated by subject matter experts, relevant documentation, and audio/visual aids. The course will include a two-day hands-on laboratory, which is optional but recommended.

Course Objectives

• Students will describe engineering principles for substantiating composite airframe structures during all stages of aircraft product certification.
• Students will understand the essential safety awareness issues associated with composite aircraft structural engineering technologies and their application.

Who Should Attend?

• All professionals responsible for the engineering of composites, including individuals with a wide range of background in composites technology prior to taking this course.
• FAA Directorate/ACO engineers, international civil aviation authorities, and industry designees who participate in the certification of composite structures.
• Engineers at aerospace companies who are involved in designing and analyzing composite structures.

Prerequisite

Students will review summary reading material which encapsulates the basic knowledge of composite materials and structures technology during the first week of the online class, followed by an assessment to measure students understanding of prerequisite content. After completing the online assessment, students are given access to the CSET course.

Course Topics include:

• Challenges of Composite Applications
• Design, Material and Fabrication Development
• Proof of Structure
• Quality Control of Composite Manufacturing Processes
• Maintenance Interface Issues
• Additional Topics such as flutter, crashworthiness, fire safety, fuel tank issues, and lightning protection
Dates: Oct. 17 – Feb. 5 (online component- at least 6 hours per week)  
Nov. 8-9 (on-site lab component)

Lab Location: National Center for Aviation Training (NCAT)  
4004 N Webb Rd. Wichita, KS 67226  
No parking permit is needed.

Registration Fee: Tuition is $2,500.00. It includes both the online and hands-on laboratory regard less of whether an individual chooses to attend the optional laboratory. Course materials at the laboratory are included with tuition. Register and pay on-line at www.wichita.edu/conferences. Registration is limited to 22 individuals and will be accepted on a first come first serve basis.

Cancellations and Refunds: All cancellations must be made in writing. A 15% administrative fee will be assessed on all cancellations (this includes purchase orders). There will be no refunds after Aug. 29, 2016. WSU reserves the right to cancel the program due to lack of enrollment. In that event, WSU will refund any pre-paid course fees but will not be responsible for any incidental or consequential damages.

Quotes from past students concerning the course

- There’s so much FAA and industry guidance on composites, that having it all distilled into a course like CSET allowed me to write a clear certification methodology in just a few weeks. (G.S., Consultant Structures DER and ODA Unit Member)

- I wish I had this education years ago, as it has definitely reinforced the protocols that I have picked up along the way. For a new designer in the aerospace field, this would be a great tool to shorten the learning curve. (E.B., Stress Engineer)

- The instructor encouraged the participants’ interaction by asking questions and did provide a lot of information from their experiences that is not included in the course contents. –L.S., Research and Development Engineer (Honeywell)

- I often felt out of my depth in discussions, but the knowledge and input of those more experienced in my areas of weakness was one of the most valuable aspects of the course. On other topics, I realized I was the expert and others probably gained from my experiences. –M.A.

Space is limited, register quickly to reserve your spot!

If the class fills prior to registering, students are placed on a waiting list for possible future classes.
ABOUT THE INSTRUCTORS

Peter Smith
Peter Smith is a retired Boeing Technical Fellow with over 50 years of experience in the aerospace industry. He has worked in engineering areas such as aircraft structural design and analysis, wind tunnel, flight and structural testing, weights engineering, manufacturing, repair and research into composite material applications to aircraft structural components. He has spent the last 34 years working on the application of advanced composite materials to aircraft structural components such as wings, fuselage, stabilizers and flight control panels. Peter spent 10 years of his 25 years at the Boeing Company working on NASA sponsored research into the application of composite materials to primary structural components of commercial aircraft. After retirement from Boeing in 1999, Peter headed an ex-Boeing team which created a Supplemental Composite Structure Damage Assessment and Repair Manual for the Next Generation 737 (B-737/600/700/800/900). He assisted Boeing with repair requirements for the composite components of the B-787.

Charles Seaton
Charles Seaton has over 30 years of experience in aircraft design, manufacturing, education and aircraft modification. Charles applies his extensive aerospace and education development experiences to a wide range of technical and business curricula. He leads and consults in global education initiatives which promote safe practices with composite materials in aerospace and other industries. He has taught and developed curricula with international composite experts and educators in the field of composite technology repair and engineering for over ten years, including being a project leader in the FAA’s education initiatives. Charles has been an active member and chairman of the Commercial Aircraft Composite Repair Committee training task force which promotes standard work practices.

Christos Kassapoglou
FAA engineers who have supported the development of CSET and participated in course discussions at various times collectively have nearly 80 years of FAA experience and 120 years of industry experience. The following engineers will participate as appropriate in the online discussions when aviation regulations, guidance or policy questions arise.

**Lester Cheng**
Dr. Lester Cheng is an Aerospace Engineer residing in the FAA Small Airplane Directorate. He has worked for the FAA for a total of 21 years. In his early tenure with the FAA, Lester supported many certification programs (e.g., parts 23 & 25). Since 1999, he extensively supported the development of composite safety and certification initiatives.

FAA Experience: 21 Years, Industry Experience: 20 Years

**Mark Freisthler**
Mark Freisthler is an aerospace engineer currently assigned to the Transport Airplane Directorate (TAD) standards staff, airframe, and cabin safety branch. Prior to his current assignment he worked in the Airframe Branch of the Seattle Aircraft Certification Office. Since joining the FAA in 2002, Mark has supported many transport airplane certification programs. He also represents the transport airplane directorate to a number of government/industry consortiums such as MMPDS and CMH-17. Mark’s main experience is in the development of material design values for composite and metallic materials.

FAA Experience: 10 Years, Industry Experience: 21 Years

**Larry Ilcewicz**
Dr. Larry Ilcewicz is the FAA Chief Scientific and Technical Advisor for Composite Materials. He started work with the FAA in 1998. Since joining the FAA, he supported many small airplane, rotorcraft, and transport aircraft certification programs. He has also worked on accident investigations and service problems involving composites. These experiences helped Larry develop an international plan for composite safety and certification initiatives.

FAA Experience: 15 Years, Industry Experience: 19 Years

**Allen Rauschendorfer**
Allen Rauschendorfer is the FAA Composites Technical Specialist for the Seattle Aircraft Certification Office. He is currently responsible for the Continued Operational Safety of the Boeing 787 and 767 programs. In his previous five years of working at SACO, he was responsible for the airframe certification on the Boeing 787-8 program. Allen’s experience in airframe design for new aerospace products for both military (B-2, A-6 Rewing, F-22, A-12, P-8A, Airborne Laser) and commercial (757-300, 777-100, 737-600/700/800) programs have given him an understanding of real world design and manufacturing of composite material applications as well as the certification challenges facing composites usage on commercial aerospace products.

FAA Experience: 5 Years, Industry Experience: 22 Years

**Nathan Weigand**
Nathan Weigand is currently an Aerospace Engineer for the airframe branch of the Seattle Aircraft Certification Office. He started work in Industry on composite specimen and full scale test programs. While in industry he also dispositioned discrepancies in the composite manufacturing process. He is currently at the FAA using this experience to support the CSET course.

FAA Experience: 2 Years, Industry Experience: 10 Years
Composite Structural Engineering Technology Course
Registration Form
Wichita State University – Office of University Conferences, 1845 Fairmount, Campus Box 136, Wichita, KS 67260-0136
316-978-6493; Fax: 316-978-3064; Web: http://www.wichita.edu/conferences E-mail: conference.office@wichita.edu

Company Name__________________________ Company Phone ____________________________

Mailing Address__________________________________________________________________________

City/State/Zip______________________________________________________________________________

Registration/Billing Contact________________________ E-mail: ________________________________

Participant Names Phone (day) Email address Attend optional lab?
_________________________________________ _____________ _____________ ______________
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Registration Fee: $2,500 Total Due: ______________

Payment Method:
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☐ Visa ☐ Mastercard ☐ American Express ☐ Discover

CC#:________________________ Expiration Date:_________________
Security Code:_______________ (3 digit code on back of card or 4 digits on front of American Express)

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How to Register:

On-line at: http://www.wichita.edu/conferences

By Fax: 316-978-3064

Mail: WSU – Office of University Conferences
1845 Fairmount, Campus Box 136
Wichita, KS 67260-0136

Questions? Contact WSU Conferences at 316-978-6493