



Introduction to Aeronautics -- A Practical Perspective

- **WHEN and WHERE:** 7-10 February 2017, (8:00 – 4:30) at the National Institute of Aerospace (NIA), Room 101, in Hampton, Virginia
- **COURSE DESCRIPTION and MATERIALS:** After taking this short course, you will never look at an airplane the same again! Using design as a common thread, this course answers questions like: High wing placement or low -- swept or unswept? One vertical stabilizer or two? Canard or conventional configuration? Turbofan or turbojet? Packed full of examples, you will graduate with a solid understanding of the basics of aeronautics and the give-and-take inherent to aircraft design. You'll also gain an appreciation for the aircraft as a collection of subsystems ... a "collection" that must be successfully integrated for the aircraft to accomplish its mission. A "field trip" to the Virginia Air and Space Center will hit the concepts home! With clear lesson objectives, the key aspects of aeronautics are presented:
 - Low and High-Speed Aerodynamics ⇒ Lift -- Sources of Drag – Stall -- Mach Number Effects -- Designing for Speed
 - Stability and Control ⇒ Ailerons, Elevator, and Rudder -- Designing for Roll, Pitch, and Yaw Stability
 - Structures ⇒ Ribs, Spars, and Pressure Bulkheads -- G-Loading -- Landing Gear -- Flight "Envelope"
 - Propulsion Systems ⇒ Propellers to SCRAMjets -- Piston and Gas Turbine Engines -- Airframe & Engine Integration
 - Aircraft Performance ⇒ Thrust Curves, Range and Endurance, Glides, Climbs, Takeoffs and Landings, and Turns

While the focus is clearly on conventional airplanes, discussion will include other air vehicles, including airships, RPVs, helicopters, and stealth, hypersonic, and micro-air vehicles. You will be given a set of course notes and a copy of *Aerodynamics for Naval Aviators*, the best reference available. 3.2 Continuing Education Units (CEUs) are awarded.

- **WHO SHOULD ATTEND:** Anyone working directly or indirectly in the field of aviation -- program managers, engineers, scientists, analysts, and technicians -- aircraft operations, test, logistical, and maintenance personnel. A building-block approach is used -- no prior knowledge is assumed. Since 2002, we've taught thousands of "students" from audiences across the Air Force, Navy, NASA, FAA, and industry. Our instructors have earned a tremendous reputation for teaching fundamental aeronautics and propulsion -- in our classroom, theory and practical application come alive! Here's what a few graduates have said:
 - *"Without a doubt, the best course of any type held here at Edwards AFB"* Edwards AFB, California
 - *"Keep coming back to PAX!!! Excellent course! Would be very beneficial for lots of people! Excellent instructors – I liked the examples and detail of explanation – caring/patient!"* NAS Patuxent River, Maryland
 - *"Exceeded expectations! It was exactly what I was looking for. After 23 years in the propulsion area, I found I knew very little about the rest of the plane."* Wright-Patterson AFB, Ohio
 - *"Perfect balance of technical and practical information -- best class I've taken since I've been with NASA (17 years) – spoke at a level where everyone could understand."* NASA Marshall, Alabama
 - *"Best airplane/flying/aero course I've taken! Furthermore, quite possibly the best teaching technique I've ever seen. Am going to add this class to our engineer's required curriculum."* Robins AFB, Georgia
- **COST, REGISTRATION, and CANCELLATION POLICY:** \$1650, \$1485 for Federal Government employees -- this rate is also extended to NIA employees, NIA partners, and AIAA members. Group discounts are available. For more information and to register, visit PracticalAero.com, contact JEllsworth@PracticalAero.com, or call (719) 659-7319. Substitutions may be made at any time. Cancellations must be received two weeks prior to course start date and are subject to a \$50 fee. If you must cancel within the two-week period, and do not have a substitute, you may forfeit the entire fee. Total refunds are issued if the course is canceled.