



Introduction to Aeronautics -- A Practical Perspective **(Live Virtual Offering)**

- **WHEN:** Monday - Friday, 26-30 September 2022. Class will be conducted in a morning and afternoon session each of the five days from 9:00 – 12:00 and 1:00 – 4:00 using MS Teams. (Computer webcam and audio are required.) All times are Eastern. Additional guidance, including instructions for obtaining course materials (see below), will be provided.
- **COURSE DESCRIPTION and MATERIALS:** After taking this short course, you will never look at an airplane the same way 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 will 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 virtual field trip to the National Museum of the Air Force and/or the Smithsonian Air and Space Museum will bring 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 lighter-than-air vehicles, helicopters, stealth, and hypersonics. You will be given a set of course notes and a copy of *A Practical Introduction to Aeronautics*, a new text designed specifically for this course. 3.2 Continuing Education Units (CEUs) are awarded.
- **WHO SHOULD ATTEND:** Anyone working directly or indirectly in the field of aviation -- program managers, analysts, engineers, scientists, 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:
 - *“The course covered the topic at a high level without dumbing down too much. I appreciate the physics-based approach.”* Dayton, Ohio
 - *“This course has helped me make the connection from theory (school) to work (application).”* Oklahoma City, Oklahoma
 - *“Course was a good mix of overview and details for someone with little engineering knowledge. It was presented in practical terms to make it easy to understand. Videos and visual aids made it interesting.”* Hampton, Virginia
 - *“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.”* Huntsville, 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.”* Warner Robins, Georgia
- **COST, REGISTRATION, and CANCELLATION POLICY:** \$1800 (\$1725 if registered by 31 Aug 2022), \$1700 for Federal Government employees -- 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. Refunds of the registration fee (only) are issued if the course is canceled.