AEROSPACE
SHORT COURSES

Conceptual Design of Unmanned Aircraft Systems (AERO0210)

Instructor: Willem Anemaat

Course Description

This course provides a conceptual approach to the overall design of Unmanned Aircraft Systems (UAS) including classes of air vehicles. It also covers requirements and architecture development, history, initial sizing, aerodynamics, configuration elements, weight & balance, propulsion, trim, cost.

Course Highlights

- Introduction to Unmanned Aircraft Systems (UAS), including conceptual design issues and operating environments
- Air vehicle parametric design and propulsion
- Conceptual level aerodynamics
- Conceptual level weight estimation
- Parametric geometry
- Air vehicle performance
- Mission assessment
- Life cycle cost estimation

Who Should Attend?

Designed primarily for practicing conceptual level design engineers, systems engineers, technologists, researchers, educators, and engineering managers. For maximum course benefit, students should have some knowledge of basic aerodynamics and conceptual aircraft design, although it is not mandatory. Basic knowledge of spreadsheet analysis methods is assumed.

Learning Objectives

- Design and analyze overall unmanned aircraft systems
- Understand key air vehicle configuration drivers, how to estimate aero/propulsion/weight/stability, overall air vehicle performance, size and tradeoffs

Course Outline

Day One

- Course introduction
- Introduction to UAS

- Design Process
- Drag Estimation
- Weight Sizing
- Performance Sizing

Day Two

- UAS Elements
- UAS History
- Configuration Design
- Preliminary Design Sequence
- Weights, Center of Gravity
- Stability & Control
- Propulsion
- Aerodynamics

Day Three

- Cost
- Lessons Learned
- Design Exercise

Classroom hours / CEUs

21.00 classroom hours
2.10 CEUs

Certificate Track

Aircraft Design
Unmanned Aircraft

Course Fees

Early registration course fee: $1,995 if you register and pay by the early registration deadline (45 days out).

Regular registration course fee: $2,095 if you register and pay after the early registration deadline.

Course Materials

Course materials, including outlines, presentation copies, and supplementary materials, will be accessible through Canvas, KU's online learning system. Instructions to access Canvas will be provided upon completed registration. Students are required to bring a computer or other electronic device with PDF-viewing capabilities with them to class each day. If you require accommodation contact us at professionalprograms@ku.edu and we will work with you on an accessible solution.

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.

Instructor Bios

Willem A. J. Anemaat is president and co-founder of Design, Analysis and Research Corporation (DARcorporation), an aeronautical engineering and prototype development company. DARcorporation specializes in airplane design and engineering consulting services, wind and water tunnel testing and design and testing of wind energy devices. Anemaat is the software architect for the Advanced Aircraft Analysis (AAA) software, an airplane preliminary design and analysis tool. He has been actively involved with more than 400 airplane design projects and has run many subsonic wind tunnel tests for clients. Anemaat has more than 30 publications in the field of airplane design and analysis. He is the recipient of the SAE 2010 Forest R. McFarland Award, an AIAA Associate Fellow and an associate editor for the AIAA Journal of Aircraft. Anemaat is Vice-Chair of the AIAA Aircraft Design Technical Committee. Anemaat holds an M.S.A.E. degree from the Delft University of Technology in The Netherlands and a Ph.D. in aerospace engineering from The University of Kansas.

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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 ProfessionalPrograms@ku.edu.

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