Prof. Afzal Suleman
University of Victoria
Canada

will present the seminar

AUTONOMOUS AIR SYSTEMS:
Research and development of next generation green aviation solutions

which will be held on

October 19, 2023 (Thursday) at 12:00
in person, in the Scientific Council Room on the 1st floor

Abstract:

Unmanned Aircraft Systems (UAS) have existed for decades, with the primary market drivers being military requirements. While the value of the UAS as a military asset is well known, civilian use of UAS has seen a dramatic increase in activity in recent years. This talk will present some of the research and development in the area of "Unmanned Air Systems: Design, Build, Test and Fly" at the Center for Aerospace Research at the University of Victoria in partnership with OEMs such as Boeing (USA), Embraer (Brazil), and nationally with the Department of National Defense and Bombardier Aerospace.

The computational and experimental research program aims to improve the performance of complex aerospace engineering systems through advances in mathematical and computational models, and experimental methods that incorporate multidisciplinary analysis, design optimization and subscale UAV model flight testing for the synthesis of optimal and novel aircraft designs. The design and development of physical flight test platforms provide a low-cost opportunity to evaluate flight worthiness of new and unconventional aircraft configurations. The presentation will outline some of the experimental UAV flight test programs for evaluation of joined-wing and high-aspect ratio aircraft configurations in collaboration with OEMs. The UAV based flight test programs enable designers to retrieve quantifiable data and to provide a qualitative assessment of the aircraft handling qualities. It provides new perspectives that may lead to identification of design issues early in the development process thus avoiding expensive re-designs at the detailed design phase of the full scale transport aircraft. Additionally, research efforts in hybrid-electric propulsion systems will also be discussed.

Afzal Suleman. Canada Research Chair (Tier1) and Professor, Director - Center for Aerospace Research, University of Victoria (2000-Present). BSc (Honours) and MSc in Aeronautical Engineering, Imperial College, U. London, UK. PhD in Space Dynamics (1992) from the University of British Columbia, Canada. International Space University, Advanced Space Studies Program, Japan, 1992. National Research Council Fellow, U.S. Air Force Research Labs (1992-1994). National Delegate, United Nations Committee on Peaceful Uses of Outer Space (UN-COPUOS). National Delegate, NATO Applied Vehicle Technology Panel. Member, Canadian Armed Forces Advisory Board (2015-2021). Government of Canada Space Advisory Board (2016-2022). Fellow of the American Institute of Aeronautics and Astronautics. Fellow of the Canadian Academy of Engineers. Member of the Academy of Sciences of Lisbon. Fellow Royal Aeronautical Society. Associate VP Research (2009-2010), and Associate Dean Research (2005-2009) University of Victoria. Recipient of the NATO Von Karman Medal (2021). Research and development in Aeronautics and Space, with emphasis on Aircraft Design, Aeroelasticity, Aeroacoustics, Multidisciplinary Design Optimization, Advanced Composite Structures and Materials, Autonomous Air Systems, Flight Testing.