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The Department of Mechanical Engineering
Presents

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11:10 AM - 12:00 PM
Winston Chung Hall 205/206

Design and evolution in flying devices - both large & small

Abstract:
It could be argued that success in human-engineered flight began exactly as designs departed from facsimiles of nature, and in many respects, modern aircraft bear little resemblance to natural flyers. As small unmanned air vehicles become more practicable to design and operate, our thoughts may turn again to whether they should share some features with the bioflyers, whose at-least-moderate degree of efficiency is surely assured by the long evolutionary time-scales... The question then arises as to whether an optimal configuration exists, and then as to whether it may be reachable. Two sets of research threads will be outlined, one involving scales where birds, bats and micro-air vehicles intersect in design space, and one where we will claim that most commercial transports are operating far from likely superior solutions. Tracks for future research on these points also overlap in interesting ways.

About the Speaker:
Professor Geoffrey Spedding received his PhD in Zoology at Bristol University, England, working on the aerodynamics of bird flight. Deciding that the applied mechanics and aerodynamics were the most satisfying components of that work, he moved to the Mechanical and Aerospace Engineering Departments at USC to work on mechanical models of insect wings. He found himself surrounded by all kinds of interesting projects in geophysical fluid dynamics and started work in this field. Since then, he has worked on the evolution of turbulence in stratified oceans and atmospheres, and on various small-scale aerodynamics problems. In 2009 he became Chair of the AME Department at USC, in 2010 he was elected an APS Fellow, and in 2013 was a visiting Chaire Joliot at ESPCI, in Paris.

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