

Brief Biographical Sketch

Professor and Department Head Gary Balas:

Professor Gary Balas joined the Department of Aerospace Engineering at the University of Minnesota in January of 1990 as an Assistant Professor. He received his Ph.D. from California Institute of Technology in 1989 and both his MS (in 1984) and BS (in 1982) from University of California, Irvine. Professor Balas serves the University in his roles as teacher, researcher, and department head. Professor Balas is also co-director of the inter-departmental Control Science and Dynamical Systems program at the University.

Professor Balas' main research interest is narrowing the gap between engineering requirements, real-time control implementation and theoretical control analysis and design techniques. Dr. Balas' areas of research include: extension of receding horizon control, linear, parameter-varying control and dynamic inversion techniques to address highly nonlinear and switched systems, development and application of a robust, multivariable control theory to flexible structures, flight and high speed underwater vehicle control and process control; development of a unifying approach to aircraft health management and control to dramatically increase flight safety. Specific topics being studied are: development of a systematic nonlinear robustness analysis tools to aid validation and verification of adaptive, flight control systems; design and experimental validation of vehicle control algorithms for a high speed, supercavitating underwater vehicle; development of a new control framework for impulse vehicle control, robustness of nonlinear inversion techniques in the presence of model error and development of an indoor, uninhabited aerial vehicle to help test and validate the theory, algorithms and real-time software being developed by his group.

During his professional career, Dr. Balas has had over 50 published in refereed journals and has received several prestigious awards and fellowships, including the American Automatic Control Council O. Hugo Schuck Best Paper Award in 2006, IEEE Control System Society Control Systems Technology Award in 2005, IEEE Fellow in 2004, IT George Taylor Distinguished Research Award from the University of Minnesota in 2003, ASME Dynamic Systems and Control Outstanding Young Investigator Award in 1999, and a McKnight-Land Grant Professorship, also from the University of Minnesota in 1993.