

# DEPARTMENT OF MECHANICAL ENGINEERING

## WILLIAM MAXWELL REED SEMINAR SERIES

### **Model-Based Systems Engineering**

Frank Bourne, Ph.D.

Florida Institute of Technology

**Abstract:** The discipline of Systems Engineering emerged in the final decades of the 20<sup>th</sup> century from the challenge of architecting and engineering complex aerospace and software systems from often incomplete and/or ambiguous requirements. As the discipline matured, agencies developed case studies, companies promoted professional development, and higher education responded with graduate and eventually undergraduate offerings. Over the last decade, Model-Based Systems Engineering (MBSE) has emerged as a formalized, model-based engineering approach to complex system development and management across the entire system life cycle. Consistency in requirements management, architecture development, documentation of decision-making rationale, configuration management, information exchange and ease of transition from system to software design are just a few of the benefits associated with MBSE as compared to the traditional document-based approach. This talk will introduce basic MBSE concepts including SysML - Systems Modeling Language - the de facto standard for industry from the Object Management Group (OMG) and provide example artifacts from a current Cubesat Mission / System Development activity.

**Bio:** Dr. Frank Bourne received his B.S., M.S. and Ph.D. degrees in Mechanical Engineering from Clemson University. Immediately prior to joining the faculty at FIT as a Research Professor in the Department of Engineering Systems, Dr. Bourne was Director, Research & Development at Harris Corporation, Space & Intelligence Systems in Palm Bay, Florida. As an R&D leader, Dr. Bourne managed an enterprise focused on development of critical solutions across a broad range of technologies and engineering disciplines, including mechanical systems, RF and digital electronics, photonics, telecommunications and networking, signal processing, remote sensing and software systems. Over the course of his 30+ year career in the Aerospace & Defense industry, Dr. Bourne has been a highly-regarded engineering leader, with experience ranging across all aspects of technology development, synthesis of comprehensive system solutions, and alignment of corporate business strategy in service to the U.S. Department of Defense, the Intelligence Community, the Telecommunications industry, and a variety of other technology-centric markets. His current research interests are in the area of cubesat /small satellite mission and system development.

**Date:** February 3, 2017

**Time:** 3:00pm

**Place:** CB 106

**Contact:** Dr. Alexandre Martin 257-4462

Meet the speaker and have refreshments  
Attendance open to all interested persons



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