Aerospace Applications of Systems Engineering
Instructors: Donald T. Ward, Mark K. Wilson, D. Mike Phillips

Description
An introduction to systems engineering fundamentals as applied to aerospace systems with emphasis on manned aircraft, both commercial and military. The course is based on evolving systems engineering standards, the current versions of the INCOSE Systems Engineering Handbook (the Systems Engineering Book of Knowledge), and the underlying EIA/IS 632, IEEE P1220 and INCOSE papers. The material provides a working knowledge of all elements, technical and managerial, involved in systems engineering as applied to aerospace systems of varying complexity. It concentrates on the most troublesome areas in systems development: requirements definition and derivation, integration, allocation of requirements, risk management, verification and validation. Hardware and software systems case studies, primarily from the aircraft sector of the aerospace industry are used as examples. Techniques have been used on many commercial aircraft (from large airliners to military fighters to small personal aircraft), DoD and NASA programs.

Highlights
- Comprehensive exposure of systems engineering practices including comprehensive synopsis of all processes and terminology suggested by the INCOSE SE Handbook, definition of terms and methods
- Summary of system life cycles as currently utilized by the U. S. Department of Defense, industry and NASA, with discussion of potential changes in the development and sustainment approaches along with the potential impacts (for example, model-based systems engineering (MBSE), product line management (PLM), and other innovations)
- Introduction to standard practices and activities including requirements generation, trade studies, architectural practices, functional allocation and decomposition, and verification/validation methodologies
- Scope a systems engineering plan for specific purposes—example from large military programs and from a tightly focused research program
- Practical exercises in requirements identification and definition, risk and opportunity management, and in tailoring a systems engineering process to a specific project
- Assessment of specialty engineering contributions to systems engineering effort—value of integrated product and process teams and interaction between project management and systems engineering
- Emphasis on software-intensive systems and innovations in software engineering
- Use of multiple case studies from military, commercial and research implementations of systems engineering to illustrate principles and to illuminate good practices

Who should attend?
The lectures and practice are designed for systems engineers at all levels and program managers developing large or small systems. It is especially well-suited for engineers moving into systems engineering from other disciplines.

“Outstanding course! Taught by industry professionals who fully conveyed the value of systems engineering principles in a dynamic, participative and fun way! Highly effective.”
—Steven Kirbach, Systems Engineer