TEACHING SCIENCE AND TECHNOLOGY, INC.

Applied Space Systems Engineering

A Practical Approach to Achieving Technical Baselines

Course Description

This 3-5 day tailorable course examines the practical application of systems engineering processes throughout the space mission life cycle. The course is aimed at practical, hands-on application of systems engineering tools and techniques that can be realistically applied within your project environment to deliver capabilities on time, in budget and with acceptable risk.

Using a combination of lectures, interactive discussions and group exercises, the course presents a detailed review of all major systems engineering processes within three major categories: Design, Realization and Systems Engineering Management.

A detailed end-to-end system case study is used to translate theory to practice by illustrating specific how-to examples for achieving and establishing each major technical baseline throughout the mission life cycle.

Who Should Attend

Systems engineers, payload principle investigators, subsystem engineers or project managers involved in any phase of the product life cycle.

Course Objectives

At the end of this course you should be able to…

- ✦ Define key systems engineering terms
- ✦ Explain fundamental systems engineering principles
- ✦ Apply systems engineering tools and techniques to solve specific design, manage and realization challenges
- ✦ Develop relevant systems engineering artifacts for a given scenario that captures and communicates design, systems management and system realization decisions

Testimonials

"Emphasis on the 17 processes improved my understanding of how they fit into the project life cycle." – NASA Engineer

"I think the course was of great value and beneficial to my career. I think the value was more realized after the course" – NASA Engineer

"I enjoyed the instructor - he went out of his way to teach a few additional concepts to make sure we understood the material. He made the course interesting by inserting his own stories and experiences!" - NASA Engineer

"I am looking forward to becoming a more effective team member by implementing my new knowledge of the SE process." - Astroscale Engineer

*"*I've seen a lot of this information in pieces over the years (30+). However, it was really nice to see it all together in one project, going from inception to devops. Having an example to work with was great!* - NASA Engineer

Course Topics

- ✦ **Designing Systems**
  - Stakeholder Expectations and Requirements
  - Operations Concept and Mission Architecture Development
  - Technical Requirements Engineering
  - Logical Decomposition & Physical Solutions
- ✦ **Managing the System Engineering Processes**
  - Technical Planning
  - Interface Management
  - Risk Management
  - Configuration & Technical Data Management
  - Technical Decision Analysis
  - Systems Engineering Management Planning
  - Technical Reviews
- ✦ **Realizing Systems**
  - System Implementation (buying/building/re-using)
  - System Integration
  - System Verification & Validation
  - System Transition and DevOps
- ✦ **Detailed End-to-End Case Study**
- ✦ **Hands-on Exercises**

Course Materials

Each participant will receive:

- A complete set of course notes with copies of all slides used in the presentations
- An e-copy of the *Applied Space Systems Engineering* textbook