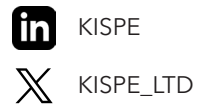


Designing Space Missions and Systems



Course Description

Designing Space Missions and Systems examines the real-world application of the entire space systems engineering discipline.

Using a process-oriented approach, the course starts with basic mission objectives and examines the principles and practical methods for mission design and operations in depth.

Interactive discussions focus on initial requirements definition, operations concept development, architecture trade-offs, payload design, bus sizing, subsystem definition, system manufacturing, verification and operations.

This is a hands-on course with a focus on applications. Design exercises are conducted to give first-hand experience with the techniques presented and gain experience with mission design trade-offs.

Course Materials

Each participant will receive:

- A complete electronic set of course notes with copies of the slides used in the presentation
- An e-copy of the Space Mission Analysis & Design-CORE textbook

Course Objectives

- Defining high level mission goals and objectives
- Deriving system and subsystem requirements
- Identifying design solution options and drivers
- Applying design trade-off tools, techniques and methodologies to select specific solution options
- Describing the wider impact of design solutions across the rest of the mission architecture, (cost, schedule, risk, integration and test, launch, and operations)



Who Should Attend

Systems engineers, payload principle investigators, subsystem engineers or project managers who are responsible for the detailed design and operation of Space Systems.

Course Topics

Module 1: Space Systems Engineering and Mission Design

- Introduction to Applied Space Systems Engineering
- Designing Space Missions

Module 2: Mission Constraints and Enablers

- Space Environment
- Orbit Design and Applications
- Launch System Services
- Technical Risk Management and TRL
- Digital Engineering Tools and Techniques

Module 3: Spacecraft Design

- Payloads
- Spacecraft Architecture
- Spaceflight Software

Module 4: Subsystem Design

- EPS
- ADCS/GNC
- Propulsion
- Communications
- Thermal Control
- Structures and Configuration

Module 5: Mission and System Implementation

- Quality/Product Assurance and Standards
- Assembly, Integration and Verification (AIV)
- Mission Operations and Ground Systems
- Cost and Schedule Modelling

Threaded case study throughout



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