

Aerospace Systems Design & Integration

COURSE OVERVIEW

This capstone-level course provides a comprehensive introduction to the fundamental principles and processes of designing and integrating complex aerospace systems. Moving beyond the analysis of individual components, this course focuses on the system-level perspective, where the interactions between subsystems are as critical as the subsystems themselves. The course emphasizes the critical role of systems engineering in managing complexity, performance, cost, risk, and safety in the creation of modern aircraft and spacecraft. Delegates will learn the complete product development lifecycle, from conceptual design and requirements definition through trade-off analysis, subsystem integration, testing, and validation.

WHO SHOULD ATTEND?

This course is ideal for aerospace engineers, systems engineers, avionics specialists, and aircraft design professionals involved in the development and integration of aerospace systems. It also suits project managers, technical leads, and engineering managers overseeing complex aircraft programs, as well as professionals in R&D, simulation, and testing who want to deepen their expertise in system-level design, integration, and performance optimization.

COURSE OUTCOMES

Delegates will gain the skills and knowledge to:

- Define high-level customer needs and decompose them into structured system requirements.
- Create and evaluate conceptual designs for aerospace vehicles using structured methodologies.
- Apply systems engineering tools like QFD, trade studies, and N² diagrams to optimize design and manage interfaces.
- Understand the integration of key subsystems: structures, propulsion, avionics, GNC, and thermal management.
- Identify and mitigate risks and potential failure modes throughout the design lifecycle.
- Appreciate lifecycle considerations, including manufacturability, operability, and sustainability.
- Function effectively in multidisciplinary teams to produce cohesive system designs.

KEY COURSE HIGHLIGHTS

At the end of the course, you will understand;

- The principles of aerospace systems engineering and design methodologies.
- How to apply systems engineering to integrate complex aerospace subsystems.
- Methods for designing and validating flight control, navigation, and communication systems.
- Process for autonomous flight vehicle design and implementation.
- Simulation modelling for aerospace system performance evaluation.
- Managing subsystem interfaces and ensuring compatibility across components.
- Coordinating multidisciplinary teams to deliver integrated aerospace system solutions.

All our courses are dual-certificate courses. At the end of the training, the delegates will receive two certificates.

1. A GTC end-of-course certificate
2. Continuing Professional Development (CPD) Certificate of completion with earned credits awarded