



# HUMAN SPACEFLIGHT SAFETY

Code 001



## The Challenge

The course is designed to provide the participant with an understanding of established safety principles, practices, and processes that are used for design, manufacturing, and operations of human space systems.

## Scope of the Course

To be absolutely safe, a system should never cause or have the potential to cause an accident; a goal practically impossible to achieve. For such reason in the development and operation of space systems, the term “safe” means acceptable level of risk. A space system is anything from a scientific instrument or an orbital transport vehicle to a space station or a Moon rover. A space system comprises hardware, software, and liveware (i.e., mission controllers, flight crews, ground personnel), having their own specific functions, capabilities, and limitations, and interacting to achieve the system purpose.

The focus of this course is on teaching how system safety engineering techniques are applied to space projects to prevent accidents. Generally, in modern high-tech industries accidents don't happen because the limits of human knowledge are exceeded, but because potential design, manufacturing, and organizational errors are not systematically prevented, and their risk adequately mitigated. The safety goal in a space program is to lower to a pre-defined acceptable level the risk of accidents, and to make available means and operational procedures to enhance human survival should they occur. The course provides also an historical perspective on the evolution of safety goals and requirements in space programs and on lessons learned.

## Target Audience

- Design and operations engineers and managers new to space safety principles, processes and established practices.
- Safety managers and engineers with no previous experience in space projects.

## What You Will Learn

- The safety engineering process.
- The established safety engineering practices.
- Hazard analysis principles and techniques.
- How interpret requirements and standards.
- Human performance and safety.
- Human rating concept evolution.
- Crew survival and emergency systems.
- Lessons learned.

## How You Will Learn It

- Verbal instructions using Power Point Presentations.
- Group exercises & problem solving.

## Why You Need to Know This

- To implement cost/effective safety-by-design measures
- To know the experts point of view.

## What You Will Take With You

- A book
- A USB flash drive with all the above.
- A Certificate of Course Completion.

## Course Duration

10 modules of 90 minutes each on 2 and ½ days.

## Instructor

**T. Sgobba** (ESA Ret. – Flight Safety Review Panel Chair).