

# Maintenance & Repair Skills Course

Master Degree, PhD & Young Professional



## Overview

The Maintenance and Repair Skills Course for University Level is a hands-on course designed for undergraduate, advanced degree students and young professionals who have to perform occasionally maintenance and repair operations, but who do not have the opportunity to build up experience in their daily curricula or professional life.

The course is offered to any individual or organisation keen to learn basic maintenance and repair skills and familiarise with a wide range of tools available and used on the International Space Station, in a pleasant and motivating format, with information and anecdotes about space operations.

The main objective of the course is to provide structured learning opportunity on maintenance, repair and tools usage derived from real examples of maintenance operations in space related environment.

During this 5-day course, trainees learn and practice basic mechanical, electrical, electronic, hydraulic and pneumatic skills, and then put them in practice in integrated maintenance and repair scenarios.

## Instructors

The course is delivered by ESA ITC-Certified Instructors with years of experience in Astronaut and Ground Support Personnel Training.

The experience in Astronaut Training, On-Orbit Operational Support and design of Space Products of Space Applications Services is enhanced by the experience of the Dr. Reinold Hagen Foundation in training young

professionals in the area of metalworking, plastic working, electrotechnics and pneumatics / hydraulics.

## Modules & Skills

The course in English is organised in 4 modules for a total of 25 lessons.

The mechanical module covers topic such as metal working, drilling, threads, nomenclature of tools and fasteners, their utilisation and troubleshooting.

The electrical module covers electrical components and measuring equipment, soldering & de-soldering, basics of harness nomenclature, assembly and troubleshooting.

The hydraulic & pneumatic module features an introduction to hydraulic and pneumatic systems, including safety advices and overview and/or handling of various on-board fittings and connectors.

The integrated module includes scenarios allowing the trainees to activate and practice all the skills acquired in the course, in more realistic, integrated and complex settings.

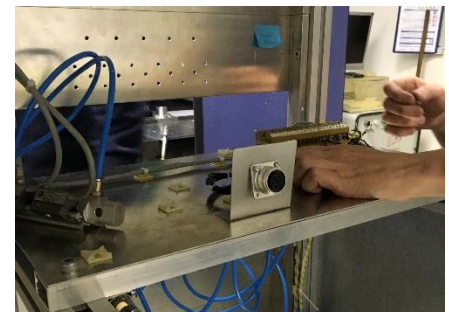
## Instructional System Design

Principles of the Instructional Design System (ISD) approach historically used for training at NASA and ESA were used during the course design and during every training implementation.

From a pedagogical perspective the course has the following features:

## Task-Centred Instructions

Basic knowledge might be helpful as a prerequisite, but most of the necessary



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knowledge is refreshed or included in each lesson.

## Learning Experience

- Real-time instructions and feedback
- From individual practice to group exercises and challenges
- From simple to complex skills
- Foster analysis, problem-solving, attention to details and accuracy.

## Course flexibility and personalisation

The course is adapted by the instructors to fit trainee skills and learning curve. See the possible CUSTOMISATION (right) for options.

## Frequently Asked Questions

### • How long is the course?

5 days.

### • When?

On-demand.

Please contact us to inquire about planning or joining a planned course.

### • Where?

In Bonn, Germany.

### • How many trainees can attend?

Max 8 trainees per implementation. Customisation is possible for different number.

### • What is the Cost?

Please contact us for inquiry on the cost per seat or per session.

### • What is included in the course?

- Digital Lessons Summaries, a helpful reminder of the best tips explained during the course
- Warm lunch at the premises by professional catering
- A signed certificate.

## CUSTOMISATION

- Exercises & scenarios customisable to specific needs or context.
- Course duration adaptable for specific needs or requirements: shorter, longer, refresher course.
- Additional lectures on space operations, space facilities and utilisation can be included on request.

## SERVICES AVAILABLE

For more information, please visit:  
<https://www.spaceapplications.com>

or contact us:  
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## ABOUT SPACE APPLICATIONS SERVICES

Space Applications Services NV/SA is an independent Belgian company founded in 1987, with a subsidiary in Houston, USA.

Our aim is to research and develop innovative systems, solutions and products and provide services to the aerospace and security markets and related industries. Our activities cover manned and unmanned spacecraft, launch/re-entry vehicles, control centres, robotics and a wide range of information systems.

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