



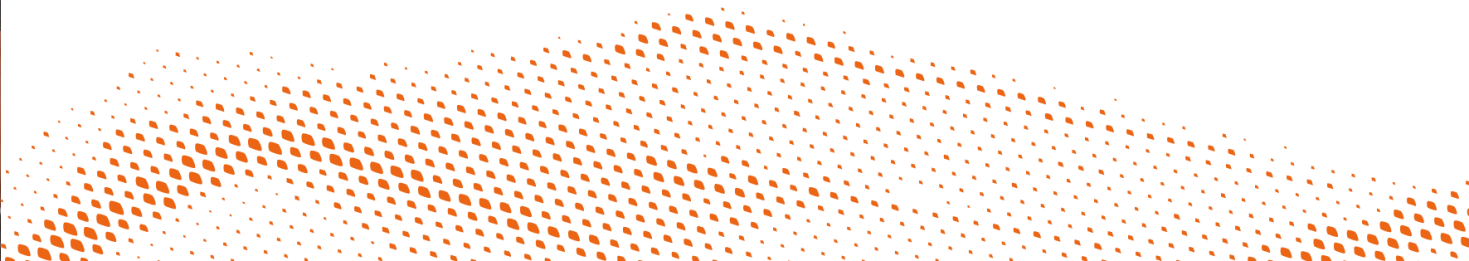
AIRBUS FOUNDATION

Together we can do more



Airbus Little Engineer Space workshop

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Description

The **Airbus Little Engineer Space Workshop** is a robotic workshop offered by Airbus Foundation for learners aged 11+ in the MENA region and now in Africa, **to instill in youth the passion for Science, Technology, Engineering and Mathematics (STEM)**, as well as space and the industry behind the space.

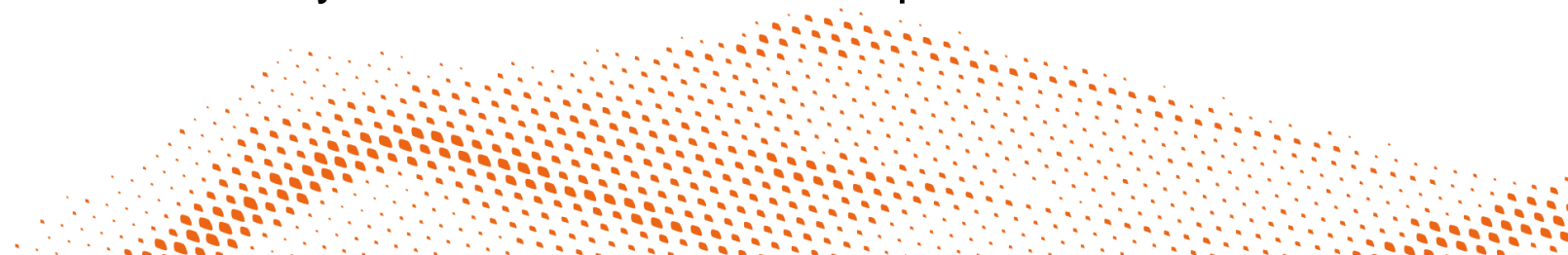
This workshop aims to introduce the students to the world of robotics generally and especially the space industry. The students will be acquainted with the Ariane 5 rocket covering its design, and abilities.

This workshop will explain the whys and the hows of reaching Mars using top notch technologies in power, telecom and space rockets.

Objectives

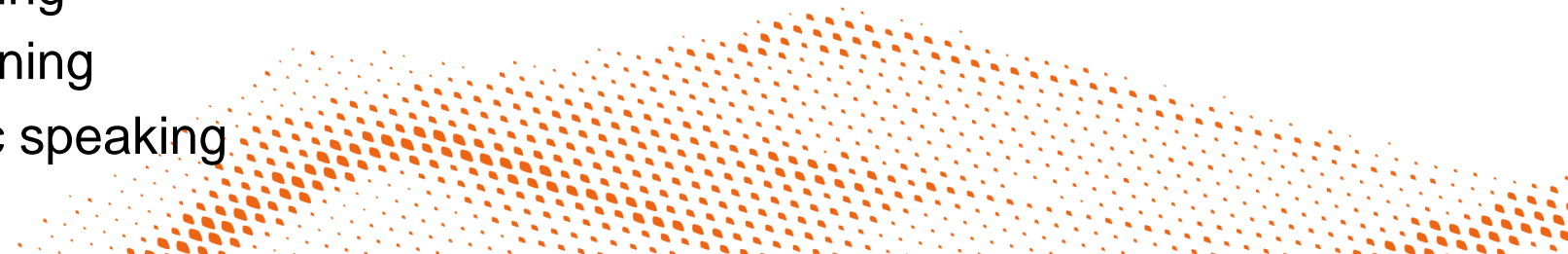
By the end of this course students will:

1. Understand the basics of robotics as it is a must in our life.
2. Learn more about vehicles needed while operating in outer space.
3. Recognize the different parts of the Ariane 5 rocket.
4. Understand the concept of power supply in space.
5. Possess the ability to understand Basic programming.
6. Create their own algorithm to develop a problem-solving robot.
7. Be aware that a huge industry is waiting for them.
8. Unleash their potential and nurture their passion so they can contribute efficiently to the future of Airbus Space.



Acquired Skills

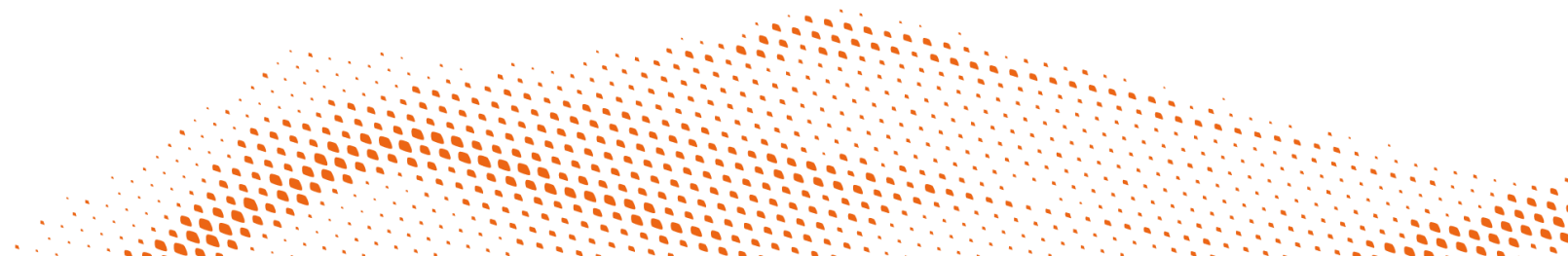
Different skills and new knowledge are learned in this workshop:

- Up to date information about Airbus Space and the defense industry
 - Collaboration
 - Concentration
 - Team work
 - Problem Solving
 - Critical Thinking
 - Troubleshooting
 - Time management
 - Planning
 - Designing
 - Public speaking
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Acquired Skills

Different skills and new knowledge are learned in this workshop:

- Survival in outer space
- Energy generation in outer space
- Image processing
- Satellites
- Rocket launching
- Multiple-output robots



Agenda of the workshop

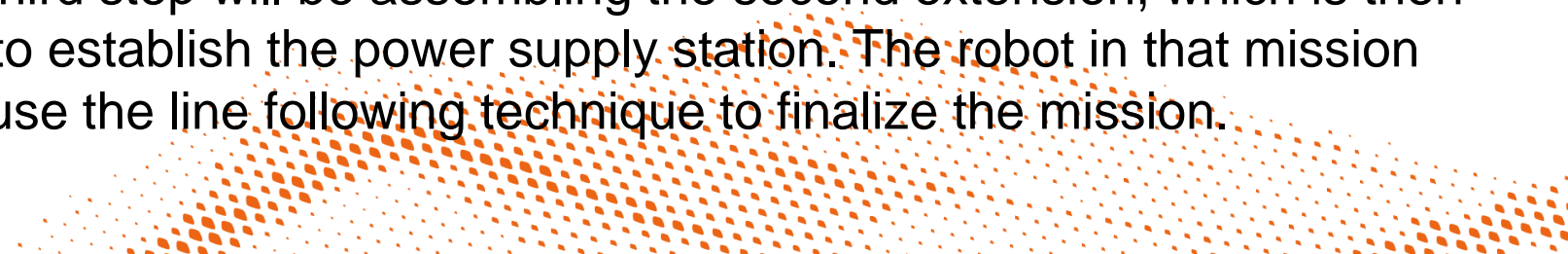
Workshop timing

10 mins	Pre-evaluation form filling
20 mins	Airbus Space Video
15 mins	Intro presentation
20 mins	Basic robot assembly
15 mins	Presentation on how to program the basic robot + mission 1
50 mins	Apply Extension #1 and execute mission 2
05 mins	Disassembly of Extension # 1
30 mins	Presentation on line following technique
15 mins	Extension # 2 Assembly
40 mins	Executing mission 3
10 mins	Group photo
10 mins	Post evaluation form filling

Total: 4 hours



The teams

- This workshop is a 4 hour **educational activity** that can host a maximum of 27 learners. They will be divided into groups of 3. The 9 Groups will compete over 3 missions.
 - They **will work closely together** during the construction phase and programming phase.
 - The first step in this **hands-on** workshop is to construct a basic robot and get it ready to fulfill the first mission which entails establishing communications in space.
 - The Second step will be to assemble an extension in order to launch a rocket that shall reach space.
 - The Third step will be assembling the second extension, which is then used to establish the power supply station. The robot in that mission shall use the line following technique to finalize the mission.
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The Missions

- **Description of mission 1:**

Learners will assemble a robot that shall reach the communication satellite and establish it.

- **Programming of mission 1:**

Learners will be introduced to the basic programming in order to manage the motion of the robot.

- **Outcomes of mission 1:**

Learners will get to know how to maneuver the robot. They will realize the importance of setting up communications in space as it is the first thing the robot will accomplish.



The Missions

- **Description of mission 2:**


Learners will assemble a robot with an extension in order to ignite a rocket launcher, which once open will set up the space station.

- **Programming of mission 2:**

Learners will be maneuvering the robot with an additional motor which controls the extension, hence the programming will include controlling multi-outputs.

- **Outcomes of mission 2:**

By the end of this mission, learners will be able to make the robot launch a rocket that shall reach Mars and establish a space station. As a result of this, they will understand more the importance of the momentum concept.



The Missions

- **Description of mission 3:**

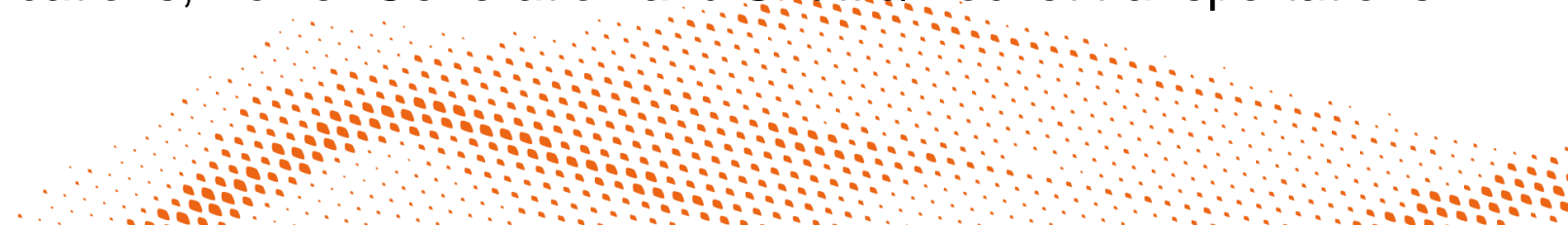
This mission is about Orbiting around Mars to bring the power station into being.

- **Programming of mission 3:**

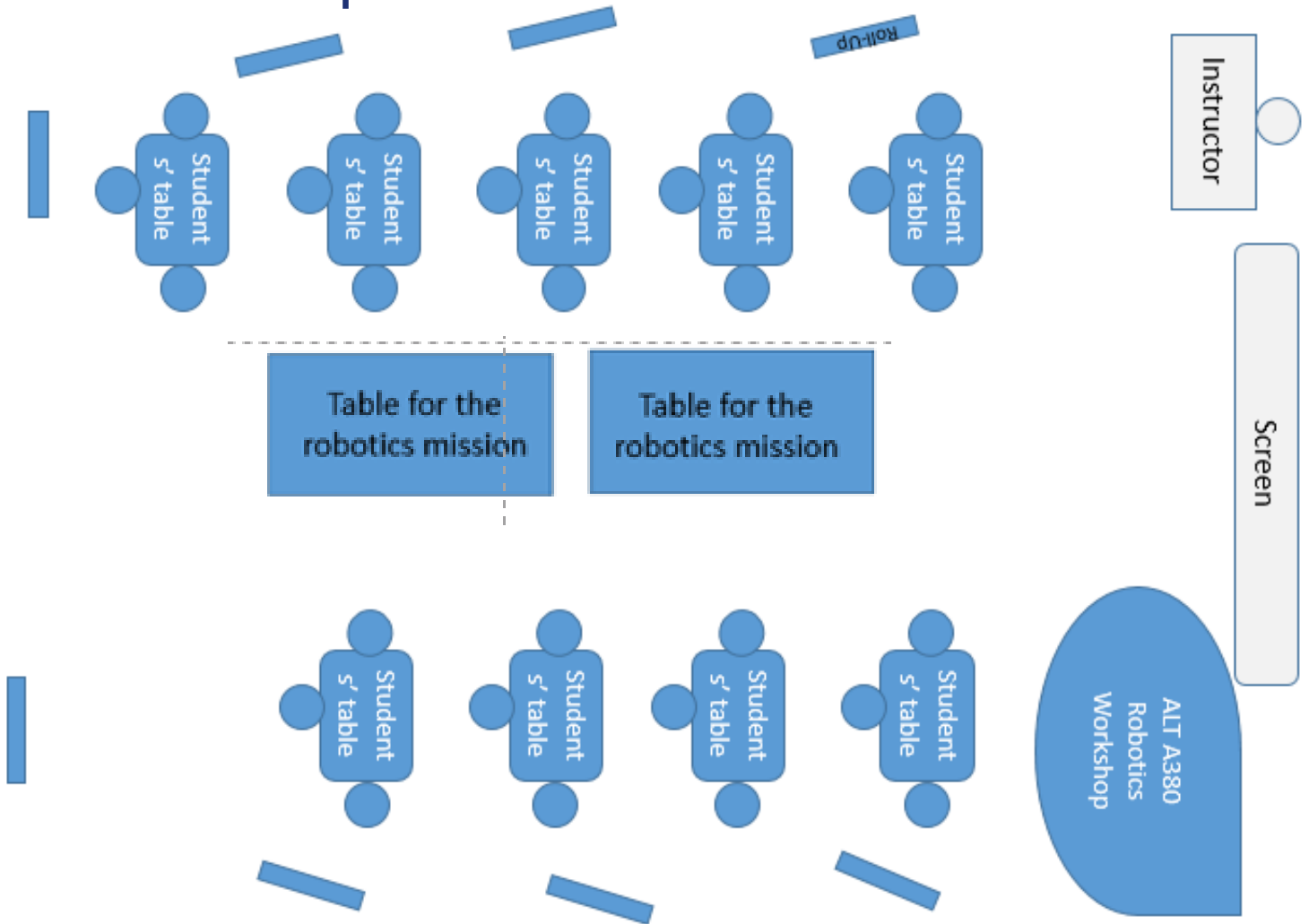
Using the line-following technique, learners will program a robot to orbit around Mars and engage with the power supply station to establish it.

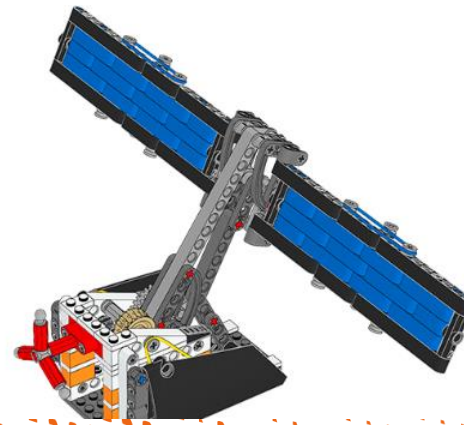
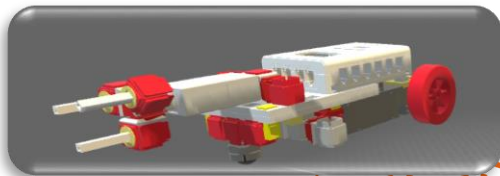
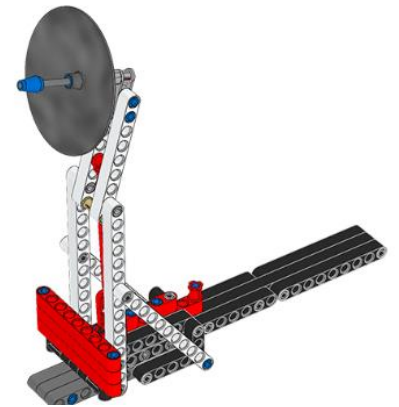
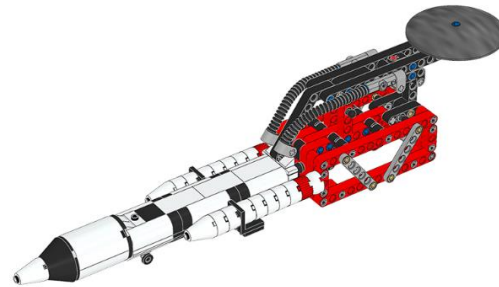
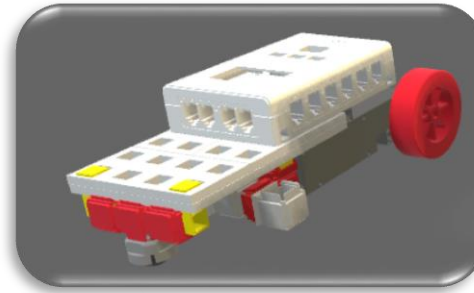
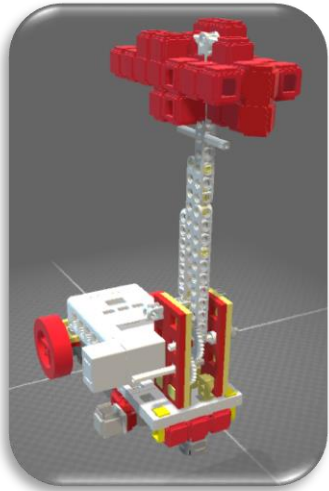
- **Outcomes of mission 3:**

Following the accomplishment of this mission, learners would have grasped the 3 main pillars for survival in outer space, which are: Communications, Power Generation and Shuttle/Rocket transportations.



Classroom Setup







Thank You

