Illustrate the System Engineering Process for spacecraft design and development through the Gaia scientific mission currently in implementation phase for European Space Agency. This training course provides an overview of the spacecraft definition and V&V processes.

Prerequisites
- System engineering basics

Learning objectives
After completing this course, participants will be able to:
- Understand the criticality of system engineering in space programs
- Differentiate roles and functions of program management team members.

Practical information and registration
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Course content

- Introduction
- Juice spacecraft system design approach
- Mission concept
- Spacecraft design elaboration
- Spacecraft design evolutions from advanced studies to frozen design
- Spacecraft autonomy and failure management
- Juice development approach
- Development model philosophy
- Test facilities and environmental test campaigns
- Functional verification
- Performance verification
- Juice project management
- Implementation of Juice within the ESA standard
- Juice system overview

Teaching methods

<table>
<thead>
<tr>
<th>Teaching methods</th>
<th>Yes</th>
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<tbody>
<tr>
<td>Lectures / tutorial</td>
<td>X</td>
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<tr>
<td>Collaborative learning</td>
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<tr>
<td>Flipped classroom</td>
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<td>Blended learning (online and face to face)</td>
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<td>Learning by doing</td>
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<td>Project-based</td>
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<td>Simulation</td>
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<td>Case study</td>
<td>X</td>
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Assessment

- Written test
- MCQ
- Marked Practicals