

# A joint Academic program for Capacity Building in Aerospace in Kenya

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## The objective:

### Building capacity in astronautics in Kenya

- The traditional approach to capacity building in developing countries is mainly based on fellowships granted to single selected students, to attend Courses and/or obtain a Degree in industrialized countries
- The gained know-how is dispersed in several “isolated” skilled individuals

## The real challenge:

How do we set up a process **locally**, so that the capacity is maintained and kept at an **Institutional level** and not merely at the individuals level.

## The main Tool:

### A joint Postgraduate Course

Set up a joint Postgraduate Course in “Capacity Building in Astronautics”, to:

- Make the process **Institutional**, not individual
- Make the process “**active**” locally
- Not just “transfer” know-how, but “**build**” know-how locally

To achieve these goals, professors at Machakos University and experts from Kenya Space Agency are directly involved in designing and setting a higher education program together with professors from Sapienza University of Rome and experts from Italian Space Agency.

This course is “tailor-made” in the spirit of the Italy-Kenya Agreement, but **this experience has the potential to be extended to other countries**

## Course Organization and target students

The course is organized in a time frame of ONE YEAR.

- **SIX MONTHS lectures and university laboratory activity**
  - THREE MONTHS at Sapienza University of Rome
  - THREE MONTHS at Machakos University
- **SIX MONTHS internship** in a space agency or space company
  - ASI offers internships for Kenyan students at the Broglio Space Center
  - Italian companies offer internship in their facilities in Italy

In this form of collaboration:

- **Students MUST attend at least 30% of the credits in the partner university**
- **Professors in both Universities are active in making decisions and giving classes**

The Course organization and the approach of the teaching methodology, makes the Course well suited for students with a BSc Degree or higher

## The application tool: desing, build, and deploy a “real” space mission in ONE YEAR – The Cubesat

Learning the space mission process, not the details (international organization, technical and managerial aspects of space mission, timeline of events, implementation of space standards)

The right tool for this is the **UNIVERSITY SATELLITE** concept

- It is a **functional spacecraft**, rather than a payload instrument or component. it must operate in space with its own independent means of communications and command.
- **Untrained personnel** (i.e. students) performed a significant fraction of key design decisions, integration & testing, and flight operations.
- **The training of these people was as important as** (if not more important) **the nominal “mission”** of the spacecraft itself.

## Relevant past experience: Postgraduate Course in Space Mission Design and Management



Teaching and joint student activities at Sapienza and University of Nairobi



Lectures at ASI (Rome) and Internships at the Broglio Space Center in Malindi



Visit to relevant Kenyan Space institutions

- **IMTR/WMO-RTC** World Meteorological Organization Reg. Training Center
- **RCMRD** - Regional Center for Mapping of Resources for Development



Support to 1KUNS-PF the first Kenya nanosatellite, beneficiary of the UNOOSA/JAXA KiboCube program

## Sustainable Development Goals directly addressed



## Many Thanks to:

