

SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)  
Enabling the Future - Developing the Space Workforce (5)

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SERPENS : A NEW EDUCATIONAL SPACE PROGRAM FOR BRAZILIAN UNIVERSITIES

**Abstract**

The SERPENS project (Sistema Espacial para Realização de Pesquisas e Experimentos com Nanos-satélites) is an initiative of the Brazilian Space Agency to support Brazilian aerospace engineering courses. The main objective of the project is to qualify students and young engineers to work in the Brazilian Space Program. SERPENS program is based on a new educational method that involves students in a real project and, in the same time, in a worldwide team. Weekly lectures are followed by hands-on activities where the students are involved in the design of the first 3U CubeSat from Brazil. The educational aim of the SERPENS Project is to joint universities with research in Aerospace Engineering in a consortium, in order to collect all the expertise from each institution. The participating institutions of the first mission are:

- Course of Aerospace Engineering of UFSC – Joinville/SC; Course of Aerospace Engineering of UFABC – São Bernardo do Campo/SP; Course of Aerospace Engineering of UFMG – Belo Horizonte/MG; Course of Aerospace Engineering of UnB – Brasília/DF; Fluminense Federal Institute – Campos de Goitacazes/RJ; Engineering team of AEB; Technological Laboratory of Integrable Systems – LSITEC/SP; University of Vigo – Spain; Morehead State University – USA; University of Roma Sapienza- Italy; California Polytechnic State University – USA

This is the first educational activity that is involving all the universities with aerospace courses together in Brazil, and more than 80 students are already involved in the project. Every year this program will allow the students to design and launch their own satellite, with the main payload selected after a competition between the students proposals. For the first mission the satellite has the goal to test new solutions for the Brazilian Data Collecting System and will board two different OBDH and TTC systems to allow the students to learn more about these two fundamental satellite segments. In addition the satellite is equipped with a FPGA allowing to perform in orbit update of the ADCS software. This peculiarity will give to the students the possibility to tests their own software and to learn more from the different performances of the solutions adopted. The SERPENS launch is scheduled for September 2014 using the Japanese module KIBO from the International Space Station. This paper presents the program and deals with the results achieved by the Consortium in the first year of activity.