SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
Living In Space - Education And Outreach In Space Life Sciences and infrastructure development for capacity building (7.-A1.8)

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THE FRENCH SOUTH AFRICAN INSTITUTE OF TECHNOLOGY POSTGRADUATE PROGRAMME IN SATELLITE SYSTEMS ENGINEERING – SKILLS DEVELOPMENT FOR THE SOUTH AFRICAN SPACE INDUSTRY

Abstract

The South African Government has identified Space Science and Technology as one of five Grand Challenges in the 10-year Innovation Plan of the Department of Science and Technology. This vision has culminated in the recent establishment of the South African Space Agency (SANSA).

In 2009, the French South African Institute of Technology (F'SATI) initiated a postgraduate programme in Satellite Systems Engineering at the Cape Peninsula University of Technology (CPUT) to address the human capacity development (HCD) required in support of the national space industry. The F'SATI programme is funded as a flagship programme by the National Research Foundation. The Programme currently has 40 registered postgraduates and is the foremost HCD Programme in Space Science and Technology in South Africa. In the F'SATI model students are awarded Master's degrees from CPUT, as well as from l'Ecole Supérieure d'Ingénieurs en Electronique et Electrotechnique (Paris). There is a similar agreement for a dual-doctorate degree.

The Programme can broadly be divided into three phases: academic coursework, individual research projects, and professional development. The academic coursework modules are designed to prepare students for their research projects in satellite engineering. The remainder of the two year Master's degree focuses on the students' individual research projects that support the satellite programme. After graduation, the graduated engineers volunteer for a 1-year professional development phase where they are deployed in our high-technology laboratories to develop their individual research projects into integrated, space-qualified nano-satellites.

The CubeSat standard has been selected as a practical and low-cost technology platform to provide the students with hands-on experience in satellite technology. Currently a one-unit (1U) and three-unit (3U) CubeSat are in development, carrying space weather, amateur radio, optical and experimental technology demonstrator payloads. The first mission launch is planned for early 2012.

In order to develop space science interest within the South African domain, F'SATI conducts an active community development and outreach programme using Cansats to introduce learners to the fields of space science and technology. The Programme also offers a series of national Space Industry Seminars in partnership with the South African Government and players in the international satellite industry.

The F'SATI model, which fuses an internationally recognised postgraduate degree with practical experience on a real satellite, close linkages with industry, and community involvement, has proven to be highly effective and sustainable.