

Undergraduate Satellite Program @ Nanyang Technological University

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Abstract

The NTU Satellite Research Centre has a competent Low Earth Orbit satellite mission design and development team. It comprises of full-time engineers and researchers in several specialist groups headed by their respective group leaders. It is managed by a project management and system engineering team. The team has successfully completed several satellite engineering projects since 1994. The most notable achievement in the past was the Merlion communication payload for UoSAT-12 mini-satellite in 1999 and the upcoming launch of a 120kg micro-satellite, X-SAT.

The X-SAT is a remote sensing micro-satellite using an electro-optical instrument with near real-time data downlink capability. The project is undertaken by a joint team comprising staffs from both NTU and DSO National Laboratories. The project also involves participation from the various Schools under the College of Engineering of NTU, as well as partners such as CRISP, ISRO, DLR and SaTReCi. The X-SAT is the first micro-satellite mission designed and built totally within the NTU campus. It is also the first made in Singapore satellite.

Arising from the completion of X-SAT, NTU is embarking on an educational program to train undergraduate students for the industry and attract top students to study in Engineering. The undergraduate satellite program aims to build an advanced nano-satellite to interest bright NTU students in space technology and provide them the opportunity to turn their imagination into reality through a multidisciplinary program. The objective is to nurture the students' creativity and encourage team work and fulfill NTU mission of providing broad education in diverse discipline. For this first nano-satellite program, we plan to build a pair of satellites comprising a pico-sat and a nano-sat. It will be initially launched as an integrated unit but will be separated subsequently to perform cooperative and distributed sensing experiments. The centre is also collaborating with several universities and organizations to further strengthen NTU's reputation as a global university of excellence whose strengths lie in science and technology.