

News Archive: Undergraduate

DLR launches 'STERN' rocket programme for students

5 October 2010



On Tuesday, 5 October 2010, the German Aerospace Centre (Deutsche Zentrum für Luft- und Raumfahrt; DLR) launched a support programme for students to develop, build and launch their own rockets. The programme goes by the acronym STERN from the German Studentische Experimental-Raketen, or Student Experimental Rockets. The programme is aimed at all universities that offer courses in aerospace technology.

The rockets should have a small telemetry payload to transmit key trajectory data back to Earth during flight and provide information to the students including the rocket's altitude and speed. The rockets may be propelled by a solid-fuel, hybrid or steam motor. In order to teach the students engineering and science, and to put their technical knowledge to the test as early as possible in their studies, there are no height restrictions on the rocket.

The programme will run for up to three years, depending on the university and the scope of the project. The students' work will be integrated into courses that already deal with various aspects of rocketry. In addition to the design of the engine, project activities will focus primarily on the rocket system as a whole, which demands interdisciplinary thinking and teamwork because of its complexity.

Experimenting under realistic conditions



As they would in a real-life aerospace technology project, or the development of a new launch system, future graduates will have to meet milestones that specify both timing and technical progress. They will also be required to attend various reviews to present and explain their design to a critical audience.

The students' tasks will include wind tunnel testing - recording the flow profile around the rocket and comparing it with models derived using computational fluid dynamics. Other fields of activity focus on the design of pressure vessels such as tanks and motor casings, the nozzle geometry and strength calculations (finite element analysis) for the rocket components.



Breaking the European altitude record with a student-developed propulsion system

Students will be invited to test the engines they have built at the DLR test centre in Lampoldshausen, near Heilbronn, Germany - where the engines for the Ariane 5 launcher are tested. At the end of each project, the result should be a flight-capable rocket. The rockets will be launched from the Esrange Space Center at Kiruna, in Sweden.

There, the European altitude record of 12.55 kilometres for an amateur rocket was set. To break this record and fly even higher could be a long-term objective of the DLR programme during its planned three-year duration - offering universities a long-term prospect for training a new generation of researchers, particularly in the area of astronautics.

Leading the programme is the DLR Space Agency in Bonn, supported by DLR's Mobile Rocket Base (Mobilen Raketen Basis; MORABA). Eurolaunch - a cooperative venture between MORABA and the Swedish Space Corporation's Esrange Space Center - will run the flight campaigns.

Eligible universities are invited to submit their application now; the project starts in January 2011.

Related Contacts

Diana Gonzalez

German Aerospace Center
Space Administration, Strategy and Communications
Tel: +49 228 447-388
Fax: +49 228 447-731
E-Mail: Diana.Gonzalez@dlr.de

Karsten Lappöhn

German Aerospace Center
Space Administration, Launchers
Tel: +49 228 447-520

Fax: +49 228 447-706
E-Mail: Karsten.Lappoehn@dlr.de

Contact details for image and video enquiries as well as information regarding DLR's terms of use can be found on the DLR portal imprint.