

SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
On Track - Undergraduate Space Education (3)

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SPACESHIP TEC 21: AN AEROSPACE PROGRAM BASED ON ROCKETS DESIGNED BY
UNDERGRADUATE AND GRADUATE STUDENTS AND RELATED OUTREACH ACTIVITIES FOR
ELEMENTARY AND MIDDLE SCHOOL STUDENTS

Abstract

The Tecnológico de Monterrey has proposed the Spaceship Tec 21 initiative in order to develop the foundations to start a college student-based program to strengthen the Mexican space program. This program is focusing on academic, scientific and social purposes. Students and professors of undergraduate and graduate programs, companies and government agencies do the design and development of the project. This program will further train engineers in many areas, such as mechatronics, mechanical, electrical, and computer engineering. Two fundamental components exist in this project: (1) the development of technology by undergraduate and graduate students, and (2) the diffusion and outreach of such technology to elementary and middle school students. This project has three missions: An academic mission: the execution and launching of rockets designed by students in order to validate the aerospace technology they developed. A scientific mission: carrying a payload with various scientific instruments, including atmospheric monitoring devices and a biological laboratory. A social mission: the project will involve elementary and middle school students in order to motivate and inspire them to get involved in science and engineering programs. The technology necessary for the aerospace mission was successfully developed, including the rocket launcher, rocket construction and ignition, flight control, monitoring and communication systems. An additional aim of this project was to develop a strategy to spark the interest of young children and teenagers in rocketry, by means of their involvement in the giving a name to the rocket, and participating in launching and learning the basics of spaceflight.