

IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
Lift Off - Secondary Space Education (2)

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CASE-BASED SPACE OUTREACH: THE CASE OF A MISSION TO MARS

Abstract

Since 2003, the DEEP Summer Program at the University of Toronto has aimed to raise awareness about engineering and education the next generation about STEM topics by having university researchers build courses around their topic of research. Several Aerospace related courses have been done as part of DEEP, and this paper explores one of the most recent courses titled "A mission to Mars". In this 5 day course, students at grades 9-12 learn about the basic principle of space flight and explore different phased of a mission, from launch to transfer to landing. The unique feature of this course its multidisciplinary nature, as the course not only reviews the engineering technology that enables human missions to Mars, but also explores the mission from other perspectives such as physiological, and psychosocial. The mission the course is centered on is used to connect these disciplines and showcase how they interact with each other, enabling students to better understand engineering trade-offs that come into play when designing a space mission. After describing the course itself and the pedagogical theories behind it, the paper will present evaluation results from the students who attended the course in 2017 and 2018, along with ideas on how the course could be extended and used in classroom environments.