

IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
Hands-on Space Education and Outreach (8)

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MARS AND SPACE EXPLORATION PROGRAM: EMPOWERING UNDERGRADUATE STEM
EDUCATION THROUGH HANDS-ON COLLABORATIVE PROJECTS**Abstract**

The paper presents a recent initiative of the University of Houston (UH) and Houston Community College (HCC) to establish a partnership among several US colleges and universities through a multi-institutional Mars and Space Exploration Program to bring research and learning experiences in space exploration to undergraduate STEM students.

To support the initiative, HCC Division of Natural Sciences, HCC West Houston Institute (WHI) and UH Cullen College of Engineering (CCOE)/ Sasakawa International Center for Space Architecture (SICSA) develop a Mars Habitat Project. The Project includes model/mock-up design and build experience as well as research-driven projects and activities for undergraduate students. Research aspect of the program connects the habitat mock-up development with HCC's undergraduate STEM curriculum. A full-size model/low-fidelity mock-up segments of the Mars habitat are designed and built by SICSA graduate students in collaboration with faculty and students from HCC and other participating colleges and universities. The model is built in stages allowing flexibility for HCC students to participate in the construction work and development of related scientific projects. The modularity of the model design enables potential modifications for diverse space habitation projects in the future.

In the summary, the paper presents a broader framework for the Mars and Space Exploration Program. The program provides means for enabling multi-level and multi-institutional student participation in the Mars Habitation Projects and other space-related projects. The Program's innovative projects aim to stimulate and strengthen student interest in academic pathways and careers in STEM through interdisciplinary and multidisciplinary research, hands-on activities, and supplemental learning materials in the field of space exploration. A platform for partner institutions collaboration in joint research and educational projects is provided through a designated to the program website.