

IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
In Orbit - Postgraduate Space Education (4)

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EVALUATION OF AN INTERDISCIPLINARY POSTGRADUATE EDUCATION PROGRAM ON
SPACE ROBOTICS AND PLANETARY EXPLORATION TECHNOLOGIES WITHIN THE
INSTITUTE OF SPACE SYSTEMS AT THE UNIVERSITY OF STUTTGART**Abstract**

In April 2017 the Institute of Space Systems (IRS) at the University of Stuttgart started a postgraduate educational program within the lecture context of space robotics and technologies for planetary surface exploration. Intention of the education program was to connect interdisciplinary research and innovative development fields to maximise the educational impact and knowledge gain for postgraduate participants. To cover a broad field, the research incorporates industrial SME aerospace companies, external research facilities and workshops on the development of space systems. To innovatively focus on the interdisciplinary context, two modules are part of the program, each consisting of two major project phases. The first term combines educational and interactive lectures by experts of space system development linked to the elaboration of phase 0/A studies (regarding to ECSS standards) for the design proposal of a robotic surface exploration mission by postgraduate students. The second term focuses on the interdisciplinary development, realisation, testing, and verification of a robotic prototype (hardware) system designed and operated on a predefined demonstration mission at the laboratory facilities of the University. This paper presents the detailed structure and coordination required to maximise the learning outcome of this interdisciplinary education program, and gives an overview of the accomplished achievements of each project phase. The paper reflects on the lessons learned after successfully realising the second cycle of the program. This strongly deals with involving the evaluation process by and with the postgraduate students during and after each semester term. Part of this evaluation process are detailed review assessments as well as in-depth feedback and consultation dialogues. In this paper the inevitable contribution of interdisciplinary education programs for excellent education shall be described, especially for the context of technology development for space exploration. This is underlined by the in-depth knowledge gained on space environment, derived requirements for space system development and the state-of-the-art procedures of system engineering and project-management, soft-skill development within the project, such as team-work, and capabilities of fulfilling review and documentation standards. The interdisciplinary knowledge gain within this practical experience by especially implementing in-depth design, AIT and verification processes into a lecture context, describes a prospective approach for modern education systems.