

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

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Dr. George Born

Colorado Center for Astrodynamics Research, University of Colorado, United States,  
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DEVELOPMENT**Abstract**

Fostering collaboration between commercial spaceflight organizations and academia is an ongoing effort to promote advanced research and development, as well as to prepare a technically competent workforce. Achieving these goals will promote the future viability of the industry and its suppliers. Specifically, the University of Colorado at Boulder Department of Aerospace Engineering Sciences has been engaging with industry and government partners in the development of a new graduate level curriculum in Commercial Spaceflight Operations. Working in conjunction with the FAA Center of Excellence for Commercial Space Transportation, a two semester course sequence is under development, with the stated objective of serving as a bridge between theory and application, to prepare students to become real world problem solvers. Throughout this process, extensive industry and government input has been solicited to both define academic objectives and compile course content. A lecture based course, the beginning of the two-semester sequence, was first offered during the fall semester of 2011. The scope of the course includes industry background, technical requisites, launch considerations, on-orbit operations, ground requirements, mission planning, and end-of-mission concerns. This paper will overview the status of the overall curriculum development, as well as the perspectives obtained from partner organizations, which can be extended to curriculum development and use within other Universities. Extensive input from industry leaders was incorporated both in curriculum formation and through guest lectures. This interaction provided perspective to students, from industry, that complements the academic focus delivered through traditional graduate level coursework. The first semester lecture in this two course sequence included lectures, online collaborative discussion, project assignments relevant to commercial space, and a final report on a self-selected impediment to industry growth. All of the content in this course was delivered fully accessible to non-U.S. citizens and distance learning students. The subsequent course in this sequence, which is currently under development, will provide students with lab-based operations experience and familiarize them with tools commonly used in industry. Such simulated operations experience will provide context

to engineers and aid in the development of systems for increased efficiency in all sectors of the space industry.