

SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
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CHALLENGES IN UNDERGRADUATE EDUCATION FOR SPACE ENGINEERING

Abstract

Undergraduate education for space engineering and aerospace engineering is perhaps a starting point for a distinguished career in space sciences and space technologies. However, many experts of the field will agree that the study at undergraduate level forms a basis for all the studies of the future and it can have the largest impact on someone's career. Hence, it is essential to ensure that the best possible undergraduate education is imparted to the students at the time of their undergraduate studies. But, at the same time this brings its own challenges into the table as it will require a comprehensive planning which will need inputs from professional teachers with pedagogy training as well as from space industry professionals to help guide on the relevance of topics as well as on the current trends in the industry. The classic university education for aerospace engineers where they only study the equations of Aerodynamics, Flight Control, Orbital Mechanics and Propulsion is not sufficient anymore and students require hands on experience with equipment and other devices. The contemporary students usually have to be engaged with projects such as University Nanosatellite or Robotic Rover and these projects have to be augmented with simulation case studies using latest software such as ANSYS, COMSOL, Matlab Spacecraft Toolbox, GMAT for best results. Of course, besides these, it is also required to have good, state of the art labs so that these students can test fundamental processes in order to have intuitive understanding of these concepts. This paper will summarize the pedagogical, technological and practical challenges in undergraduate Aerospace Engineering education and will attempt to demonstrate the best possible practices.