SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
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# IDEAL EDUCATION TEMPLATE FOR UNDERGRADUATE SPACE ENGINEERING FOR ADVANCEMENT OF GLOBAL SPACE COMMUNITY

**Abstract**

Space Engineering is one of the most noble engineering professions in the world. Especially with the growing stakeholders in the aerospace sector, it has become more prominent with the involvement of governments, space agencies, global aerospace companies as well as with the emergence of new investors. Thus, more and more new engineering recruits enter their undergraduate engineering education in hopes of working either for the government or for the private sector. However, not all students have access to similar educational outreach programs and this can cause different outcomes for the same objectives. The ideal education for undergraduate space engineers of the future must combine several different streams where the students can specialize on their area of interest in their 3rd and 4th year of their undergraduate education. Of course, this specialization must be combined with theoretical courses to reinforce the fundamental physics and engineering concepts along with practical knowledge that is required in order to become a competent space engineer. The practical knowledge can be a combination of laboratory courses as well as co-op programs and internships which can have a profound impact on the student. Naturally, the laboratory courses must be of sufficient credit and they must entail basics of heat transfer, propulsion, aerodynamics and control theory to reinforce the theoretical concepts of the student. The co-op and the internships can be in form of short summer internships as well as in form of long winter training sessions. They must be conducted at aerospace government facilities or at prominent aerospace companies in order to benefit the student fully. Furthermore, the 4 year undergraduate program must be interlaced with workshops, seminars and guest speakers in order to strengthen the solution. Of course, besides the formal 4 year undergraduate education, the student must be supported and motivated to participate in national and international competitions and also motivated to participate in international forums such as IAC for maximum exposure to global space community and practices. This paper describes these concepts from the point of view of an Aerospace Engineering Professor who also has the necessary pedagogical knowledge and an ideal 4 year undergraduate space engineering program curriculum outline is also presented.