

SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
Lift-Off - Secondary Space Education (2)

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NEW EDUCATIONAL TOOL FOR TEACHING HIGH-SCHOOL STUDENTS AT UNIVERSITY
SCIENTIFIC-EDUCATIONAL CENTRES**Abstract**

During their last years at high school many students face the question of choosing their future profession, and, correspondingly, choosing the university at which to get education for such profession, which would define their professional life at the very least for many years, or probably for the rest of their lives. Moscow State Technical University named after N.E. Bauman conducts various events aimed at familiarisation of high-school students and junior university students with various professions, helping them to pick specialisation in line with their interests, and motivation towards thorough studying of key scientific subject. Here are some examples of such events: - Open Doors, when high school students are shown departments of the University and are briefed on specialisation of various departments and possible future career paths, - Scientific-Technical Olympiads, which allow to select gifted students from all over Russia and offer them seats in the University without further exams, - various joint exercises, lectures and laboratory practices. Space topics are main direction of education at Bauman University, that's why main part of such elective courses are aimed at familiarising high school students with and attracting them to space-related fields of science and technology. There are more than 15 Scientific-Educational Centres at Bauman University which are used for educating high-school students, such as: "Ion-Plasma Technologies", "New Materials, Composites and Nano-technologies", "Photonics and Infrared technologies", "Techno-park of Information Technologies", "Hydro-nautics", "Youth Space Scientific-Educational Center" and others. Students of high-schools, which are partners of Bauman University, can attend specialised practical courses, demonstrating applications of knowledge received in high-school using unique university equipment. Such approach allows significant expanding of educational environment of high-schools and lyceums. This article describes examples of laboratory courses developed at Bauman Mission control Centre for microsatellites. Such courses improve the quality of students' absorbing high-school curriculum in science, mathematics, and computers. For examples, one course studies Doppler Effect analyzing varying frequency of radio-signal received from spacecraft at ground station. Source of the signal is actual working spacecraft, while ground equipment consists of controlled antenna, receiver and data display system. Students measure changes in signal frequency, calculate satellite speed. Peculiarity of this approach to education is in use of actual mission control center and processing the signals coming from actual space craft from earth orbit. Authors have developed a series of laboratory courses which are an efficient educational tool, motivating high-school students to study science and to pick STEM-related professions.