

Future Space Technologies and Experiments in Space

The school will be held in Samara University (Kuibyshev, 1935-1991) which is one of the most significant scientific, industrial and cultural centres of Russia. Samara is situated on the left bank of the Volga River closed to the Zhiguly mountains. There are a lot of theatres, museums and very nice places for rest. The Workshop possibly might be held on board of the river ship, travelling from Samara to Volgograd (Stalingrad) and back.

Samara lies at the junction of main highways, airlines, rail and water ways. The overall aims of the school are to involve young people from multidisciplinary backgrounds into the development of micro/nanosatellites and implementation of experiments in space, to provide new fundamental knowledge and skills in applied technologies.

Attending the School participants have an opportunity to share their challenging ideas of new space missions with many new friends from Russia and other countries and establish interuniversity cooperation. Discussing the results of realized space projects, visiting lectures and seminars given by leading scientists and experts in the field of space technologies and space experiments. According to the concept of competitive activity participants included in one of the teams working on nanosatellite projects with regard to their interests and background. The final event of the school program is the public discussion of the projects designed by each team with their colleagues and invited experts.

The school consists of two stages: the distant education stage and the full-time education stage. Key dates are shown in the calendar of events. Final year bachelors, master students, PhD

students and young professionals are invited for participation.

In the first week, participants will have lectures on the basics of nanosatellite technologies (design and construction of nanosatellites, features of the dynamics of motion, navigation, control, etc.). Training will be held on the use of MATLAB software for nanosatellite mission analysis and



other simulations. In the second week, several lectures on advanced space technologies will be given. Besides, all participants will be divided in four teams. For each team will be offered nanosatellite mission for studying. Main goals of these missions will be announced at the beginning of the full-time stage. School participants can also propose their own missions. Each team will perform mission analysis, prepare a presentation and defend the results of their work in front of the experts. At the end of the school, all the participants will receive certificates

confirming successful completion of 5 ECTS training in the Advanced Space Technology and Space Experiments program (ECTS – European Credit Transfer and Accumulation System).

Main goals and topics of the school program:

- Establishing cooperation between universities in the field of space technologies and experiments in space.
- Projects of scientific-educational nanosatellites.
- Advanced technologies (methods



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and devices) for research of space environment and remote sensing.

- Attitude control technologies for nanosatellites.
- Advanced space navigation technologies/Space Physics.
- Design principles of onboard electronic systems (sensors, onboard computers, communication systems, power supply systems) for nanosatellites.
- Relative motion in space (formation flight).
- Piggyback launch of nanosatellites.
- State-of-art technologies used in the design of nanosatellite's (Solid Works / Altium Designer).

Every year Samara National Research University (Russian Federation) organizes the International Summer Space

School "Future Space Technologies and Experiments in Space".

The overall aim of the School is involving young people into the development of micro/nanosatellites and implementation of experiments in space, to provide new fundamental knowledge and skills in applied technologies.

All participants are involved in practical work with real onboard nanosatellite systems and test equipment. According to the concept of competitive activity participants included in one of teams working on nanosatellite projects with regard to their interests and background. The final event of the school program is the public discussion of the projects designed by each team with their colleagues and invited experts.



International Space School

International Space School has been organized by Samara University in collaboration with the United Nations Office for Outer Space Affairs, International Astronautical Federation, Paris, and UNISEC-Samara Chapter.

ITCA has sponsored Student's Team to Samara Summer School, Russia every year, since 2019.

World's First Satellite "Sputnik" was built and launched by Samara University Lab Only! Also, the World's First Astronaut/ Cosmonauts have been sent to Space and brought back them alive by Samara Lab only! during the then USSR (Russia)!

It is always a pride for students to get selected for International Summer Space School at Samara, Russia!

ITCA has encouraged and facilitated Students from INDIA to participate in Samara Summer Schools

The next **17th School** will start with distant (online) education stage (April 4 – April 18, 2022). During this stage 40 people will be selected for the full-time (in Samara) education stage (June 20 – July 2, 2022). After the full-time (in Samara) education stage participants will be awarded a certificate with 5 ECTS. **Deadline for applications is April 3, 2022.** For more information and application, please, visit <https://volgaspace.org/school 2022>

