Samara State Aerospace University

Department of Space Research

COURSE CERTIFICATE

Advanced technologies for nanosatellite's experiments in space

3.5 ECTS

Aliaksei Ivanou
01/12/1988

has successfully completed the above two-week course (70 hours) 27/08/2011

The aim of the course is the design of scientific nanosatellites using state-of-art computer technologies. Course includes an introduction into advanced space technologies for Low Earth Orbit satellites.

Vice rector, Professor

V.D. Bogatyryov

Head of School, Professor

I.V. Belokonov

Course syllabus

Lectures

1. Piggyback launching of nanosatellites from carrier rocket orbital stages: opportunities and problems
2. State-of-the-art information technologies for microsatellite's design (Altium Designer)
3. Circumterrestrial and Solar Space Physics: physics of the Sun
4. Circumterrestrial and Solar Space Physics: physics of the Earth
5. Introduction into onboard electronic systems of micro/nanosatellites
6. Onboard microprocessor systems of control and communication for micro/nanosatellites
7. Circuitry of onboard electronic systems for micro/nanosatellites
8. Onboard systems of orientation and stabilization for micro/nanosatellites: nowadays technology and approaches for micro/nanosatellite orientation
9. Onboard systems of orientation and stabilization for micro/nanosatellites: nowadays technology and approaches for micro/nanosatellite attitude stabilization
10. State-of-the-art technologies of space navigation: the determination of mass center motion parameters
11. State-of-the-art technologies of space navigation: the determination of motion parameters concerning of mass center
12. Tether technologies: dynamics and control of a movement
13. Tether technologies: motion around the center of mass of a micro/nanosatellites on an elastic tether
14. De-orbiting problems: uncontrolled motion of micro/nanosatellites around it's center of mass on low-altitude orbits
15. De-orbiting problems: recoverable capsule motion in Earth's atmosphere

Laboratories

1. Using Altium Designer in PCB's development
2. Space navigation
3. Physics of the Sun
4. Physics of the Earth
5. Tether technologies
6. Low orbit motion and de-orbiting
7. Onboard electronic systems

Seminars

1. Examples for providing micro/nanosatellite's orientation and stabilization