



PER ASPERA AD ASTRA!

Information letter

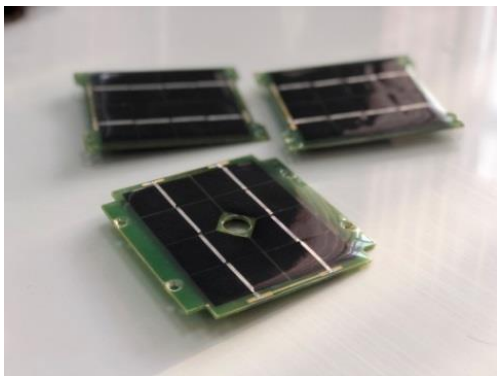
Call for Participants to International Winter School

«Siberian Space Design School 2022» (SSDS-22w)

26th January – 4th February 2022

Reshetnev Siberian State University of Science and Technology welcomes international students, PhD students, young researchers and specialists to join Online winter school “Siberian Space Design School – 2022” in the period **26th January – 4th February, 2022.**

SCHOOL OBJECTIVES



The main goal of **SSDS-22w** is studying of **the satellites development fundamentals.**

Participation in **SSDS-22w** will be mostly exciting and useful for students majoring in:

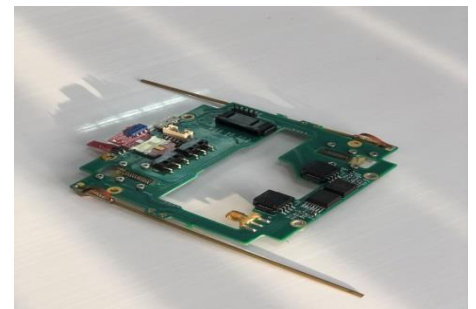
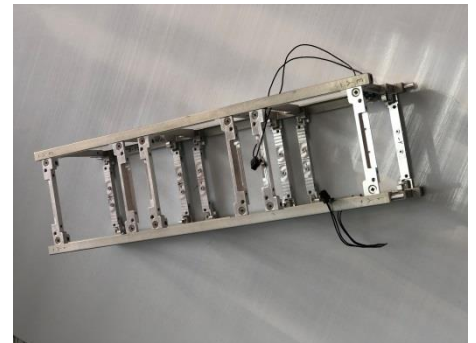
- Engineering,
- Computer Sciences,
- Modelling,
- Spacecraft and aircraft design.

SCHOOL FORMAT

The school implies online intensive project training of nanosatellites design.

Participants will gain knowledge about nanosatellites and their subsystems in lectures and practical lessons, with further developing of a space mission project in groups.

Participants will get the opportunity to communicate with experts conducting theoretical and applied research in this area.

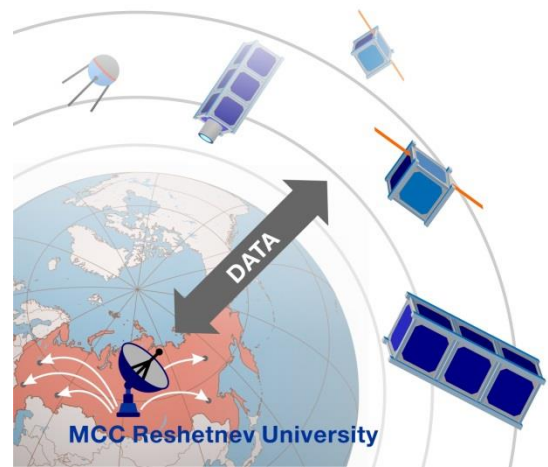


TEACHING TEAM

The **SSDS – 22w teaching team** consists of Russian top experts and specialists from Reshetnev Siberian State University of Science and Technology.

SCHOOL TOPICS

CubeSat development concept
CubeSat mechanical design
CubeSat power system
CubeSat attitude control system
CubeSat communication system
CubeSat payload
Management issues of development, production and launch of CubeSat



TECHNICAL PLATFORMS

| | |
|------------------------------|-----------------------|
| Lectures & Practical lessons | Discord/BigBlueButton |
| Tests & Problems | Moodle |
| Project works in groups | Discord/BigBlueButton |

Working language: **English**

Program participants will receive a **certificate (3 ECTS)** at completion.

TIMETABLE OF SSDS-2022w

| | |
|----------------------|--|
| Application opens | December 15, 2021 |
| Application deadline | January 23, 2022 |
| Course time | 26th January - 4th February, 2022 |

APPLICATION & ADMISSION

All students must apply to our winter school by sending the documents to the e-mail: sibspaceschool@gmail.com

1. [A complete application form](#)
2. A brief description of the research interests (maximum 2500 characters without spaces)
3. A scanned copy of a passport

CONTACTS

Organizational issues

- **Svetlana Gorbunova**, Vice-Head of International Cooperation Department, e-mail: sibspaceschool@gmail.com

Training program

- **Vladislav Khanov**, coordinator, associate professor, department of Security of Information Technologies, head of the Research Laboratory "Small satellite", e-mail: khvkh@mail.ru
- **Dmitriy Zuev**, coordinator, Research Laboratory "Small satellite", e-mail: zuevdmityriy93@yandex.ru
- **Anthony Piatkov**, coordinator, Research Laboratory "Small satellite", e-mail: AnthonyWolfhound@gmail.com

PARTICIPATION COSTS OF THE PROGRAM

Participation in the Online International School "SSDS-2022w" is **150 €** for all participants. As soon as we get the completed application form, you will get the contract to pay the participation.

Siberian Space Design School detailed schedule is available in **Appendix A**

REVIEWS OF PARTICIPANTS OF PREVIOUS SCHOOLS

Kumail Abdulaziz Radhi Hasan, student at University of Bahrain

"It was really interesting school. I enter with zero knowledge about CubeSats. Now, I have a good base of information about, I can go through this discipline. I've the important source to get more knowledge from them.



Tesfay Yemane Tesfu, PhD at Mekelle University, Ethiopia

Incredible management of event, suitable online up of discord, very relevant title of trainings, comfortable approach flow of training. Enthusiastic and cooperative approach of our monitor, and team project has made fruitful of the training.



Veryovkin Pavel, student at Reshetnev University



"Siberian satellite design school" is a dream of a true developer. I'm a student of a "Physics" bachelor program. I study a lot of theory on this program. I've seen how theory works in practice on the school. I was able to immerse myself deeply in the spacecraft topics.

It was especially interesting to learn about the history of rocketry, the construction of various spacecraft systems, as well as the organization of communication between ground stations and a satellite.

The format is quite intensive, so you need to quickly do everything and use the incoming

information, and if something does not work out, then the curators and teachers will help you. They are very responsive, help to do everything right. Thanks to the teachers and participants for a great time.

Appendix A

Siberian Space Design School (SSDS-22w)
Introduction to the design of Cubesat satellites
26.01.2022 – 04.02.2022

January, 26th, Wednesday

| | |
|-------------|---|
| Lecture 1 | Review of the school. Introduction to spaceflights. |
| Lecture 2 | Small satellites. CubeSat satellites. |
| Lunch break | |
| Lecture 3 | CubeSat payloads |
| Project * | Space mission objective. Planning of project work. |

January, 27th, Thursday

| | |
|-------------|---|
| Lecture 1 | Orbital mechanics and satellites orbits |
| Lecture 2 | Review of CubeSat on-board systems |
| Lunch break | |
| Lecture 3 | Space and launch environment. |
| Project * | Orbital parameters for CubeSat space mission objectives |

January, 28th, Friday

| | |
|-------------|---|
| Lecture 1 | CubeSat electric power system |
| ½Lecture 2 | CubeSat electric power system. |
| ½Lecture 2 | Lesson of Space Russian language |
| Lunch break | |
| Lecture 3 | CubeSat mechanical design |
| Project * | Analysis of an electric power system implementation |

January, 29th, Saturday

| | |
|-----------|--|
| Lecture 1 | CubeSat Command & Data Handling system |
| Project * | Analysis of a Command & Data Handling system implementation. |

January, 30th, Sunday

Day-off

January, 31st, Monday

| | |
|-------------|--|
| Lecture 1 | CubeSat attitude determination & control system |
| ½Lecture 2 | CubeSat attitude determination & control system |
| ½Lecture 2 | Lesson of Space Russian language |
| Lunch break | |
| Lecture 3 | CubeSat development phases |
| Project* | Analysis of a CubeSat attitude determination & control system implementation |

February, 1st, Tuesday

| | |
|-----------|----------------------------------|
| Lecture 1 | CubeSat telecommunication system |
| Lecture 2 | Ground control segment |

Lunch break

| | |
|-----------|---|
| Lecture 3 | Development process for a CubeSat |
| Project * | Analysis of a CubeSat telecommunication system implementation |

February, 2nd, Wednesday

| | |
|-----------|--|
| Lecture 1 | Manufacturing of a CubeSat and its systems |
| Project * | Mission objective refining. Functional scheme development. Analysis of payload implementation options. |

Lunch break

| | |
|-----------|---|
| Project * | Development of a block diagram for data exchange. Choose of a system interface. Estimating of an on-board computer. |
| Project * | Estimating of an electric power system. Estimating of an attitude control and determination system. |

February, 3rd, Thursday

| | |
|-----------|---|
| Lecture 1 | CubeSat operations |
| Project * | Refining mechanical design, inner architecture and deployable systems |

Lunch break

| | |
|-----------|--|
| Project * | Preliminary estimating of mass, energy, system interface and data-link budgets |
| Project * | Refinement of projects. Preparing projects to the defense. |

February, 4th, Friday

| | |
|-----------|------------------------------------|
| Project * | Preparing projects for the defense |
| Project * | Defense of projects |

Lunch break

| | |
|-----------|--|
| Project * | Defense of projects |
| Lecture | Summing-up. SSDS-22w closing ceremony. |

*** Project difficulty level can be changed depending on students' entry qualification**