

**Bauman Moscow State Technical University**

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**Bauman Moscow State Technical University**

Under the aegis of  
**Russian Federal Space Agency**



**Space Development: Theory and Practice**

Annual International Space Workshop



Russia, Moscow

July 2 – 13, 2011

## Bauman Moscow State Technical University



Founded in 1830 as an Emperor's Vocational School and located almost in the heart of Russia's capital, Moscow State Technical University named after N.E. Bauman (MSTU) was always known as an Engineering University of

educational excellence, having a potential for real greatness.

A long-term history of University provides many examples of creating a number of the world-known scientific schools which contributed to developing of different fields such as space engineering, heating engineering, biophysics, aerodynamics, radio physics, radio electronics, optics, laser technology, dynamics and strength of materials.

The University has an outstanding faculty of 3500 men and women, many of whom are recognized for their scholarship. It numbers 350 Doctors of Science and 1800 Ph.D.s.

Presently there are approximately 18000 students, concentrating their studies in science and engineering, and 1000 post graduates, working on their Ph.D. theses at BMSTU.

## Bauman Moscow State Technical University



The most-stated reason for them to enter here was the University's academic reputation.

The University provides close co-operation activities with Russian Academy of Sciences and Industry.

Opportunities offered by MSTU attracted more than 300 international students from 20 countries all over the world.

According to MSTU curriculum, its academic offerings are: bachelor's degree programs, master's programs, Ph.D. programs, pre-University programs, and internship. All training programs meet state educational standards and carry national accreditation.

## Home base for SDTP



The home base for SDTP-2011 is the BMSTU student hostel number 11 located near BMSTU and center of Moscow. This is ideally suited to support our SDTP workshop with a hostel, cafeteria, and University's conference facilities located in one place. Transportation for SDTP will be provided in a Western-style coach.

## Memorial museum of cosmonautics



The idea of this museum belonged to the S.P. Korolev – the Chief Designer of the space-rocket systems. The museum was opened on April 10, 1981. The exhibits are divided into sections and each of them depicts different stages of Russian astronautics. There are more than 3500 unique space items, such as first artificial Earth satellite, space crafts Vostok, Voshod and Soyuz, space vehicle Luna-1,3,9, descent modules of "Venera-4" and "Mars-3", moon walker "Lunokhod-1".



## Rocket and Space Corporation “Energia”



This is Russia's leading company that designs, manufactures, tests, launches and operates manned spacecrafts. Energia products include Vostok, Voskhod, Souyz and Progress transport vehicles, R-7, N-1 and Energia launch vehicles, Salut, Mir space stations. RSC Energia is the Russian primary contractor on ISS, Sea Launch and other international projects. There is an authentic space hardware in the display hall including Vostok capsules flown by Yu. Gagarin, V. Tereshkova, Voskhod capsule flown by A. Leonov and P. Beliaev, the first artificial satellites and Salut space station.

## Mission Control Center



Mission Control Center is known all over the world. The first international flight Soyuz-Apollo was controlled from the MCC. Built in 1973, MCC has practically controlled missions of Mir and Salyut orbital stations, Soyuz TM manned spacecrafts, Progress space transport vehicles, space scientific modules for orbital complexes, reusable space shuttle Buran and unmanned interplanetary space probes Venus, Mars, Zond, Vega and Phobus. MCC does its own scientific research and solves specific space flight control tasks.

## Scientific and Production enterprise “Zvezda”



Scientific and Production enterprise “Zvezda” researches, designs and produces life-support systems for aviation and space applications. It has

been developing ejection seats for fighter aircraft since 1952. The products of the enterprise today cover the entire spectrum of aviation-related requirements for life support, from clothing (flying suits, anti-gravity suits, space suits, helmets) to ejection systems, oxygen systems, and survival kits. “Zvezda” is the sole developer of aviation/space-related life-support systems in the former Soviet Union.

## Bauman Moscow State Technical University Educational and Experimental Center (Dmitrov branch)



Bauman Moscow State Technical University Educational and Experimental Center is located in Dmitrov which is about 80 km north of Moscow and is an active training facility for the university's engineering students. Included in this visit is a R-7 booster, Molniya booster acceleration unit, planetary probes, early Soyuz spacecraft sections and one of the few surviving LK manned lunar spacecraft. Participants are invited to carefully inspect all space hardware on display.



## Monino Air Force Museum



The Monino Air Force Museum exists since 1958 and now is the biggest aviation museum on the territory of the former USSR. The museum presents the origin and development of aviation in

Russia, formation of domestic aviation science and industry between the World War I and the World war 2, the Air Force contribution to the rout of Nazis, the advent after the war of novel jet aviation and evolution of the latter up to the present day. Museum's collection numbers more than 160 aircraft, 120 engines, a lot of model aircraft, air guns, missiles and rockets, bombs, fuses and ammunition, navigation instruments, pieces of radio and communication equipment, rescue equipment, flight insignia, uniform, combat banners and flags, documents, letters, personal things of pilots, as well as many art exhibits.

## Gagarin Cosmonaut Training Center in Star City



The Yuri Gagarin Cosmonaut Training Center at Star City (Zvezdny Gorodok) is the community where cosmonauts live with their families and train for upcoming space missions. Center activities include cosmonauts training in fields as follows: space vehicle control operations, space vehicle systems operation, conducting scientific experiments in space, training for life in space. The SDTP tour will include visits to the Soyuz spacecraft training area, the Mir space station training area, the hydrolaboratory neutral buoyancy facility and the center grounds.

## Space Development: Theory and Practice

### Team project and Scientific conference

In the framework of the Workshop it is planned to develop a team project, which includes a concept design of Long Term Mercury exploration rover.

During a team project all participants will split into several groups to develop a separate part of the project. Each team has to design and build a mockup of their space system. Each team will then defend their project during the Scientific conference. Participants are also welcome to make presentations about their scientific activities during the conference.



## Space Development: Theory and Practice

### Discussions with cosmonauts and astronauts



With Russian cosmonaut  
S. Krikalev



With Russian cosmonauts  
G. Strekalov, A. Serebrov



With Russian cosmonauts  
S. Krikalev, A. Lazutkin and  
American astronauts  
J. Phillips, E. Lu



With Russian cosmonaut  
A. Lazutkin and American  
astronauts D. Tany and C. Hadfield



With Russian cosmonaut  
A. Leonov

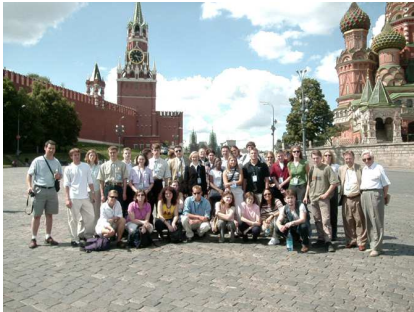


With Russian cosmonauts  
V. Kubasov, A. Serebrov



## Space Development: Theory and Practice

### Cultural program



Red Square



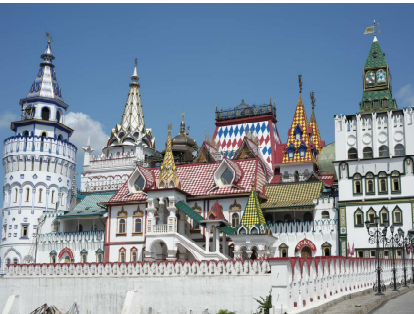
Gorky park



Kremlin Cathedrals



Pushkin fine arts museum



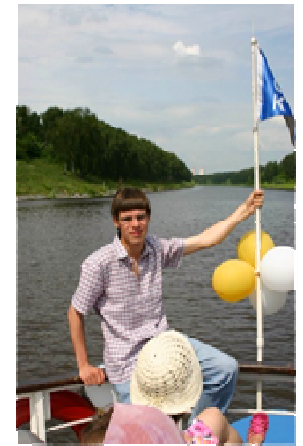
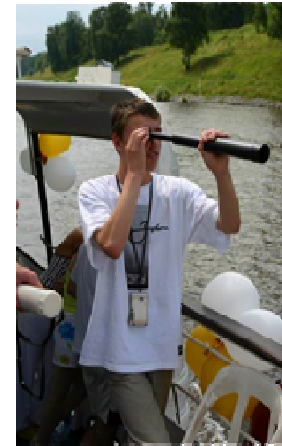
Izmailovo souvenir market



Christ The Saver Cathedral

## Space Development: Theory and Practice

### Boat trip







## SDTP-2011 program

<b>Day 1</b>	<b>July 2, Saturday</b>
	Arrival to Moscow (Participants are met by Youth Space Center representatives at the airport)
<b>Day 2</b>	<b>July 3, Sunday</b>
9:00	Breakfast
11:00	Cultural program in Moscow: Red Square, Kremlin, Alexander's Garden
18:30	Dinner
<b>Day 3</b>	<b>July 4, Monday</b>
8:15	Breakfast
10:30	Opening Ceremony in Federal Space Agency
13:00	Lunch
15:00	Visit to Bauman University museum
18:30	Dinner at
19:30	Introduction to team project
<b>Day 4</b>	<b>July 5, Tuesday</b>
8:15	Breakfast
10:00	Visit to Research, Development & Production Enterprise "Zvezda"
14:00	Lunch
15:00	Team project
18:30	Dinner
19:00	Cultural program: Theater
<b>Day 5</b>	<b>July 6, Wednesday</b>
8:15	Breakfast
10:00	Cultural program in Moscow
13:00	Lunch
15:00	Visit to Mission Control Center (Korolev)
19:00	Meeting with Russian cosmonauts and International astronauts. Discussions
<b>Day 6</b>	<b>July 7, Thursday</b>
8:15	Breakfast
10:00	Visit to Memorial museum of cosmonautics
13:00	Lunch
14:30	Team project
18:30	Dinner
19:30	Rocket modeling class

## SDTP -2011 program

<b>Day 7</b>	<b>July 8, Friday</b>
8:15	Breakfast
10:00	Visit to Gagarin Cosmonaut Training Center in Star City
13:00	Lunch at Star City
14:30	Visit to Monino Air Force museum
18:30	Dinner
19:30	Lectures on space exploration
20:45	Rocket modeling class
<b>Day 8</b>	<b>July 9, Saturday</b>
8:15	Breakfast
10:30	Visit to Bauman University Educational and Experimental Center (Dmitrov branch), Moscow region
13:00	Lunch
15:00	Visit to The Holy Trinity-St. Sergius Lavra
18:30	Dinner
19:30	Team project
<b>Day 9</b>	<b>July 10, Sunday</b>
8:15	Breakfast
10:00	Cultural Program: Tretyakov gallery, the Arbat street, the Pushkin museum of Fine Arts
19:00	Boat Trip down the Moscow River
<b>Day 10</b>	<b>July 11, Monday</b>
8:15	Breakfast
10:00	Team project
13:00	Lunch
14:30	Scientific conference Participants' Scientific Activity reports
18:30	Dinner
19:30	Model rocket launch
<b>Day 11</b>	<b>July 12, Tuesday</b>
8:15	Breakfast
11:00	Team project presentation
14:30	Lunch
15:30	Rewarding ceremony
18:30	Dinner
22:00	Cultural Program: Night Moscow
<b>Day 12</b>	<b>July 13, Wednesday</b>
	Departure



## **SDTP-2011 program**

### **Tour of Baikonur**

#### **Day 1 (Moscow time)**

10:00-13:00 Arrival to Baikonur city airport  
13:00-14:00 Transfer from airport to the hotel  
14:00-14:30 Accommodation at the hotel  
14:30-15:00 Lunch  
15:30-18:30 Excursion to Space Port facilities  
18:30-19:30 Dinner  
19:30 Evening walk (optional)

#### **Day 2 (local time)**

8:30-9:00 Breakfast  
9:30-13:30 Excursion to Space Port facilities  
13:30-14:30 Lunch  
15:00-18:00 Excursion to Space Port facilities  
18:30-19:30 Dinner  
19:30 Evening walk (optional)

#### **Day 3 (local time)**

8:30-9:30 Breakfast  
9:30-11:00 Excursion to Space Port Museum  
11:00-13:00 Tour of Space Port  
13:00-13:30 Lunch  
14:00-15:00 Transfer to Baikonur city  
15:00-16:00 Excursion to Cosmonaut Training Center  
16:30 Departure to Moscow

#### **Day 4**

Departure

**Baikonur tour is available if the group numbers at  
least 10 participants**

# **Contacts**

**SpaceDTP official website:**

<http://ysc.sm.bmstu.ru/eng/sdtp/>

**Youth Space Center official website:**

<http://ysc.sm.bmstu.ru/>

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