

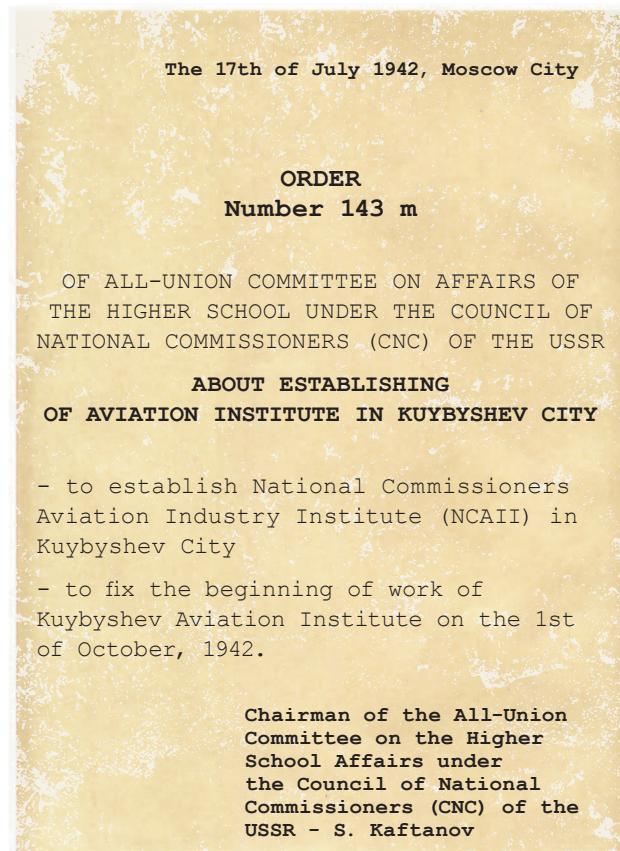
# SAMARA STATE AEROSPACE UNIVERSITY

NATIONAL RESEARCH UNIVERSITY



# SAMARA STATE AEROSPACE UNIVERSITY

NATIONAL  
RESEARCH  
UNIVERSITY



# KUAI-SSAU, THE WAY TO SUCCESS

In 1942 Kuibyshev Aviation Institute has been opened in the difficult wartime for the country. About 30 enterprises and the war industry organizations have been evacuated to Kuibyshev. The manufacture of the attack plane IL-2, which was the most mass plane of the Second World War, has been organized here. The front was in need of airplanes, and plants required engineers. The decision to found Kuibyshev Aviation Institute was accepted for the preparation of the engineering staff.

According to the order of Soviet-Union committee on higher school affairs at Soviet People Commissars of the USSR, in October 1942 the training has begun at the institute, the first graduation has been carried out in 1944.

The huge role belongs to A.M. Soifer in the institute organization, who acted as the director of the institute from the moment of its creation till November 1942. Then F.I. Stebihov has been appointed the director of the institute.

The outstanding scientists were among the first teachers. They were evacuated from the Moscow, Leningrad, Kiev, Harcov and other cities of the USSR. There were the future vice-president of AS USSR M.D. Millionshikov, the corresponding member of AS Belorussia SSR M.G. Krain, the professors: A.M. Soifer, N.I. Reznikov, M.I. Razumikhin, V.M. Dorofeev, A.A. Komarov and others. They have rendered assistance to the enterprises of the aviation industry in the preparation of the specialists, the decision of the specific problems of the manufacture, the creation and the implementation of the new engineering developments and the technologies.

The recourse-and-technical base and the research activity developed in the post-war years along with the expansion of the directions of the specialists' preparation. The research activity has been directly connected with development of the production of the newest models of the aeronautical engineering including the first jet fighters and the bombers such as MIG-9, MIG-15, MIG-17, IL-28, TU-16, TU-95, the creation of engines VK-1, NK-12 and others.

In 1957 the specialists' preparation has begun on the rocket and space engineering at the institute. The scientists and the specialists of the institute took part in the elaboration and development of the production of the first native intercontinental ballistic missiles R-7, R-7A, R-9; the carrier rockets "Vostok", "Molniya", "Souz" and their modifications; participated in creation of the rocket and space complex for providing with the manned flight on the Moon under the

project of S.P. Korolyov, the aerospace systems "Energia-Buran"; developed the different kinds of the space vehicles including the space devices for the national control of the terrestrial surface; participated in the preparation and the realization of programmes on the orbital complex "MIR", in the realization of other different projects including the programmes of the international cooperation.

The Hero of Socialist Work, the professor V.P. Lukachev was the rector of the institute since 1956 till 1988. In these years the institute became one of the biggest research center of the region, which established the unique research schools first of all in the sphere of the designing of engines, the planes, the space vehicles. During this period the directions of the specialists' preparation and the scientific researches have considerably extended at the institute. Also the contingent of the students has grown, the institute material resources have roughly developed.

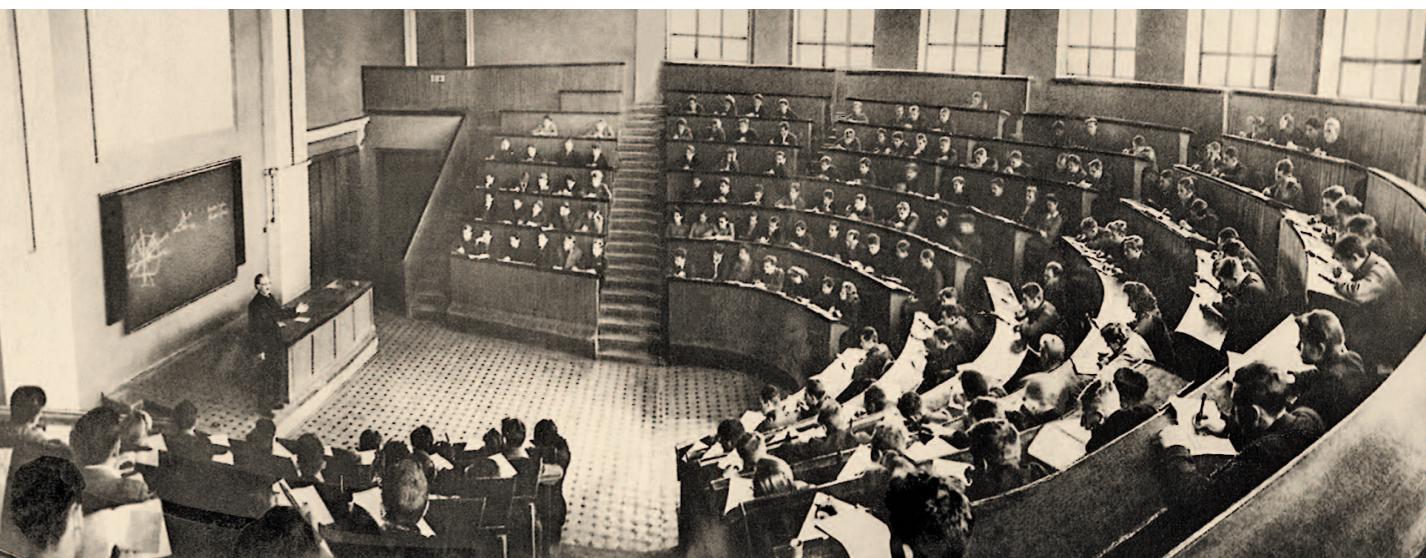
At the end of the fifties the institute has stepped forward as the initiator of the creation of the industrial branch research laboratories. It has served as a powerful impact for development of a high school science. The famous scientists and the production workers have been employed at the institute. The academician of AS USSR and RAS N.D. Kuznetsov was the



Back in 1942 Kuibyshev Aviation Institute was located in this building at Molodogvardeyskaya St.



KuAI Laboratory building at Ulyanovskaya St.



KuAI, A lecture being presented.



1954, Defence of a graduation work. Members of the examining board: M.I.Razumikhin, V.Y. Litvinov, F.I. Stebikhov, A.A. Komarov.

head of the Chair "Designing of Flying Vehicles Engine", and at the same time was the general designer of the flying vehicles engine. The founder of Russian aeronautics, the corresponding member of AS USSR and RAS D.I. Kozlov was the head of the Chair "Flying Vehicles" till recently; he was the general director and the general designer of the state scientific production space-rocket center "Central Specialized Design Bureau Progress".

The creation of the unique material MR (metal-rubber), which is widely applied all over the world to manufacture the vibration damping complex in the difficult units, and the elaboration of the whole scale of the micropower plant and the original refrigerating plants with use of the vortical effect, the production of the material by the method of the powder metallurgy and others can be noted among the scientific developments of 50-70th years. The scientific results of the scientists of the institute were applied at designing and manufacture of the air planes TU-144, TU-154, IL-76, IL-86, IL-114 and others.

In accordance with the decision of the Central Committee of the Russian Communist Party of the Soviet Union (CPSU) and the USSR Council of Ministers of "Memory perpetuating of the academician S.P. Korolyov" № 136 from the 22nd of February, 1966 Kuibyshev Aviation Institute was named after academician S.P. Korolyov. In accordance with the Decree of the Presidium of the Supreme Soviet of the Supreme Soviet from the 7th of January, 1967 Kuibyshev Aviation Institute was



The first computer "Ural-1" KuAI acquired in 1960.  
Photo of operator Yuri Ershov.

awarded the order of the Red Banner of Labour, in connection with its 25 anniversary.

The research works in the sphere of the vibration durability and the reliability of engine, the optimization of the processes and the systems of the movement control of space vehicles, the researches in the sphere of the computer optics and other high technologies had wide development in 70-80th years. At this time the alternation of generations of chairs and faculties heads has occurred, the network of dissertation councils has extended, the contacts with the Academy of Sciences of USSR, with the scientific organizations and industrial enterprises of the country have become stronger at the institute.

In 1988 the professor (now he is the academician of RAS) V.P. Shorin became the rector of the institute. The Corresponding Member of RAS V.A. Soifer is the rector of the University since 1990 till 2010. In 2010, as a result of alternative choices the new rector was elected – Professor E.V. Shahmatov.

The institute was named the Samara Aviation Institute after renaming of the city of Kuibyshev into the city of Samara. In accordance with the Order of the Ministry of science, the higher school and the technical policy of the Russian Federation (RF) №1077 from the 23d of September, 1992 the Samara Aviation Institute was renamed into Samara State Aerospace University named after academician S.P. Korolev.

In 2009, the Order of the Government of the Russian Federation № 1613-r of November 2 SSAU established the category "national research university".

For last decades of years the integration of the science researches and the educational process proceeded at the University. At present time the long-term traditions, the famous scientific schools and the material resources allow to the University to be one of the leading, scientific and educational center of Russia, to take an active part in the accomplishment of the state and the regional scientific and technical programmes, to develop the international cooperation.

For all these years the University graduated about 50 000 specialists. Many of them became the outstanding scientists, the designers and the organizers of the production, the famous statesmen and elders. Among them there are the famous chairman of Council of Ministers of RSFSR V.I. Vorotnikov, the ministers and the deputies of the ministers: S.S. Kurdukov, I.M. Burov, N.A. Dondukov, O.N. Siesuev, A.N. Geraschenko, A.G. Iljin, L.S. Svechnikov, V.V. Gorlov, the academician of RAS V.P. Shorin, the governor of the Samara region K.A. Titov.

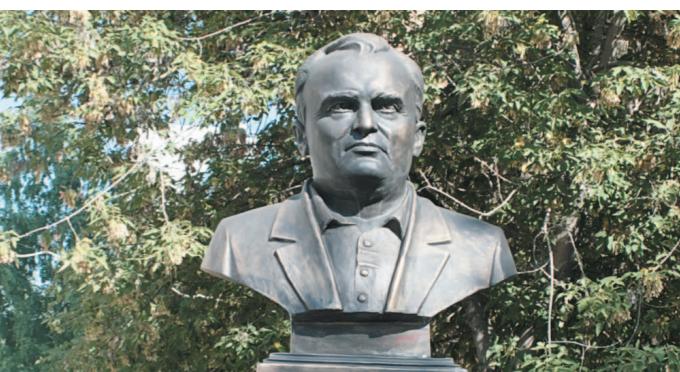
During semicentury almost all leaders of the aerospace enterprises of the Samara region were and are the graduates of the KuAI-SSAU. The University is proud of them.



SSAU main building (34, Moskovskoe shosse St.)



Commemorative plaque in memory of V.P. Lukachev, former SSAU rector (1956 – 1988).



Bust of S.P. Korolev.

# By now the University



# 60000

students graduated from  
KuAl-SSAU for the past 70 years

There are about 12,000 students from Russia, CIS countries, Western Europe, USA, China, Southeast Asia and Africa in SSAU. It trains specialists in 54 educational programs of higher education, academic staff in 34 specialties post-graduate training.

The state educational institution of higher professional education "Samara State Aerospace University named after academician S.P. Korolev (National Research University)" (SSAU) was founded in 1942 as Kuibyshev Aviation Institute (KuAl) with the purpose of the preparation of the engineers for the aircraft industry. In 1966 Kuibyshev Aviation Institute was named after academician S.P. Korolev. In 1992 Samara Aviation Institute was renamed into Samara State Aerospace University named after academician S.P. Korolev, when the University was 50.

SSAU accomplishes the preparation of the specialists for the space-rocket, aircraft, radio-electronic, metallurgical, automotive industry and other industries on full-time, part-time (evening) and correspondence courses for 54 basic educational programs and 6 programs of additional professional education. After graduation, the state diploma is given with such qualifications: Specialist, Bachelor, Master.

The University gives the postponement of military service to students studying full-time education, who are liable for call-up, and the ability to take a course at the military department for reserve officer training programs.

## THE STRUCTURE OF THE UNIVERSITY INCLUDES:

- **Faculties** (including 56 chairs with laboratories and offices): Aircraft Construction, Aircraft Engine Design, Air Transport Engineers, Industrial Engineering, Radio Engineering, Informational Science, Economics and Management, Base Preparation and Fundamental Sciences and Correspondence Education;
- **Institutions:** Institute of Supplementary Professional Education, Printing Institute;
- **The research library** stocked with over 1 million books and electronic resources;
- **Research institutes:** Research Institute of Machine Acoustics, Research Institute of Airframe constructions, Research Institute of Instrument-making, Research Institute of Technologies and Quality Problems, Research Institute of System Designing;
- Air Transport and Aviation Technical College;



The Aerospace museum named after S.P. Korolev.



Center of the History of aircraft engines named after N.D. Kuznetsov.



Science and research building.



The research library.



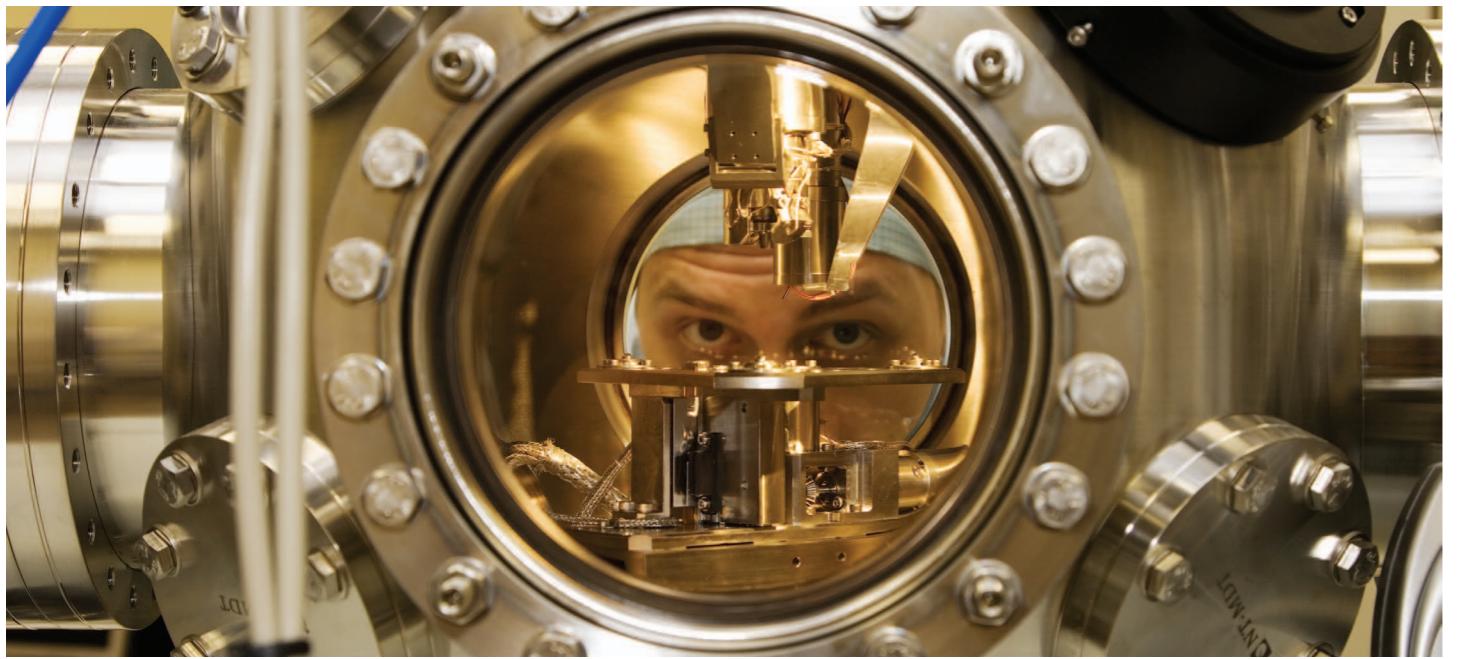
Halls of residence for students.



Intercollegiate media center with supercomputer.



The hotel.



SSAU laboratories are equipped with the latest science and research machinery, equipment and instruments.

- 35 research laboratories and centers;
- Training airfield;
- Center of the History of aircraft engines named after N.D. Kuznetsov; it is an educational and scientific-technical center which is included into the All-Russian Museum Register. The world's largest collection of Russian gas turbine engines is assembled here, the bank of the implemented engineering experience in the field of aviation gas turbine engine.
- Intercollegiate media center with supercomputer;
- The center for receiving and processing space information;
- Inter-department educational and research center of CAM-technologies;
- Public museum of aviation and cosmonautics;
- Health and fitness centers;
- Halls of residence for students and the hotel;
- The University has 9 dissertation councils for doctoral and master's theses.

The teaching staff of the university: 5 academicians and corresponding members of the Academy of Sciences, about 100 academicians and corresponding members of the public academies of sciences, 53 winners of the Lenin, State and other prizes, 75 people received state awards, 70 – honorary titles of the Russian Federation, about 900 teachers, including doctors and professors – 191 and PhDs and professors – 470.



Alexander Lazutkin, Pilot-astronaut, is a frequent guest at SSAU.

## University Faculties

### AIRCRAFT ENGINEERING FACULTY

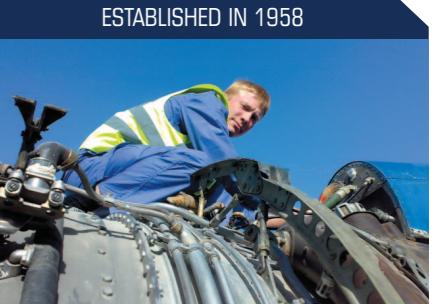
### AIRCRAFT ENGINE FACULTY

### AIRCRAFT MAINTENANCE FACULTY

### AIRCRAFT ENGINE FACULTY

### AIRCRAFT MAINTENANCE FACULTY

### AIRCRAFT MAINTENANCE FACULTY



#### Bachelor's degree programs

- 010800.62** Mechanics, Mathematical Modeling  
**151600.62** Applied Mechanics  
**220700.62** Automated Manufacturing Technology  
**221400.62** Quality Management

#### Master's degree programs

- 010800.68** Mechanics, Mathematical Modeling  
**151600.68** Applied Mechanics  
**160100.68** Aircraft Engineering  
**160400.68** Aerospace engineering: rocket and spacecraft

#### Specialist's degree programs

- 160700.65** Aircraft and Rocket Engines design  
**010701.65** Fundamental Mathematics and Mechanics  
**160100.65** Aircraft and Helicopter Engineering  
**160400.65** Engineering, manufacturing and maintenance of rocket and spacecraft



### AIRCRAFT MAINTENANCE FACULTY

### AIRCRAFT MAINTENANCE FACULTY

### AIRCRAFT MAINTENANCE FACULTY



#### Bachelor's degree programs

- 162300.62** Aircraft maintenance  
**162500.62** Aircraft electric system and avionic maintenance  
**190700.62** Transportation Technology

#### Master's degree programs

- 162300.68** Aircraft maintenance  
**162500.68** Aircraft electric system and avionic maintenance

### AIRCRAFT MAINTENANCE FACULTY

### AIRCRAFT MAINTENANCE FACULTY

### AIRCRAFT MAINTENANCE FACULTY

# University Faculties

## INDUSTRIAL ENGINEERING FACULTY

4<sup>f</sup>

ESTABLISHED IN 1958



### Bachelor's degree programs

**150400.62** Metallurgy  
**150700.62** Mechanical Engineering  
**080200.62** Management

### Master's degree programs

**150400.68** Metallurgy

## THE FACULTY OF ECONOMICS AND MANAGEMENT

7<sup>f</sup>

ESTABLISHED IN 1993



### Bachelor's degree programs

**080100.62** Economics  
**080200.62** Management  
**080500.62** Business Informatics

### Master's degree programs

**080200.68** Management

## RADIOENGINEERING FACULTY

5<sup>f</sup>

ESTABLISHED IN 1962



### Bachelor's degree programs

**200500.62** Laser Techniques and Laser Technologies  
**201000.62** Biotechnical Systems and Technologies  
**210100.62** Electronics and Nanoelectronics  
**210400.62** Radioengineering  
**211000.62** Designing and Technology of Electronic Devices  
**220700.62** Automated Manufacturing Technology

### Master's degree programs

**010900.68** Applied Mathematics and Physics  
**201000.68** Biotechnical Systems and Technologies  
**210400.68** Radioengineering  
**211000.68** Designing and Technology of Electronic Devices  
**090303.65** Information Security of Automated Systems  
**210601.65** Radio-electronic systems

## INFORMATION SCIENCE FACULTY

6<sup>f</sup>

ESTABLISHED IN 1975



### Bachelor's degree programs

**010300.62** Fundamental informatics and Information Technologies  
**010400.62** Applied Mathematics and Computer Science  
**010900.62** Applied Mathematics and Physics  
**230100.62** Computer Science and Engineering

### Master's degree programs

**010300.68** Fundamental Science and Information Technologies  
**010400.68** Applied Mathematics and Computer Science  
**010900.68** Applied Mathematics and Physics  
**230100.68** Computer Science and Engineering

### Specialist's degree program

**090303.65** Information Security of Automated Systems

## FACULTY OF BASIC TRAINING AND FUNDAMENTAL SCIENCES

ESTABLISHED IN 2008



Faculty of Basic Training and Fundamental Sciences was established in order to better coordinate and guide the process of preparation of career-oriented high school and undergraduate students. The faculty includes departments and units providing the fundamental training in basic sciences.

We conduct training for academic subjects (modules) of a "humanitarian, social and economic" and "Mathematics and sciences" cycles in the training of students in the fields and majors of the University faculties.

## INSTITUTE OF CONTINUING PROFESSIONAL EDUCATION

ESTABLISHED IN 2004



This faculty serves as an integrator of the most popular knowledge and technology in the education market, it is one of the leading centers of professional development in the Samara region.

The Institute comprise three divisions:

- Faculty of teacher's development.
- Faculty of engineers development.
- Center for computer training and further education.

### Areas of specialization and further development correspond the profile of the leading faculties and departments of the University.

- Preparation courses for the university and colleges.
- Experts in the field of computer graphics and Web-design.
- Translator in the field of professional communication.
- Higher School of Pedagogy.
- Teachers' Training.
- Professional training on the profile of the basic professional educational programs of the University.
- Training for the basic professional educational programs of the University.

Center-based computer training courses run educational services to the public on demand in the Samara region as part of short-term programs of study:

- Basic computer literacy.
- Fundamentals of computer graphics and design.
- 1C: Accounting 8.2.
- 1C: Configuration and Administration.
- Accounting and tax accounting.

Since 2007 we have opened training courses for training with higher education, for further training on the program "Computer graphics and Web-design". Since 2010 – "System Administration in the information environment".

Since 2010 the work has begun on the advanced training courses for specialists from neighboring countries. A team of specialists of various enterprises Kazakhstan studied as part of retraining course in "Hydraulic machines, hydraulic and hydropneumoautomation in space launch complexes" in the departments of University faculties.

Teachers of the Department of Aircraft Design held two seminars on space matters in the cities of Astana and Almaty.

The University is actively implementing distance learning courses, which allow to raise the qualification level of specialists in other cities within their workplace.

# University Faculties

## INSTITUTE OF PRINTING

ESTABLISHED IN 2005



It provides full-time and correspondence courses Bachelors' degree programs

**035000.62** Publishing  
**261700.62** Printing and packaging production technology

## AIR TRANSPORT COLLEGE

ESTABLISHED IN 2006



In April 2012 the College became a part of the Aviation College. It implements the professional program of vocational education in specialization:

**190701** Transport management and logistics.

## AVIATION COLLEGE

ESTABLISHED IN 1944



Since 2008 it has become part of the Samara State Aerospace University, implements professional programs of vocational education in the field of:

### Full-time training

- 151901.51** Engineering Technology
- 160108.51** Aircraft Engineering
- 160706.51** Aircraft Engine Engineering
- 190701.51** Transport management and logistics (by types)
- 230113.51** Computer systems and complexes
- 270843.51** Installation, commissioning and operation of the electrical equipment of industrial and civil buildings

### Part-time (evening) training

- 151901.51** Engineering Technology
- Part-time**
- 230113.51** Computer systems and complexes

## FACULTY OF DISTANCE LEARNING

ESTABLISHED IN 8 2000

### Bachelor degree programs

**080100.62** Economics; **080200.62** Management; **141100.62** Power Engineering; **151900.62** Technological design software for engineering industries; **190700.62** Transport technology processes; **221400.62** Quality management; **230100.62** Computer Science and Engineering

## MILITARY DEPARTMENT NAMED AFTER GENERAL G.P. GUBANOV

ESTABLISHED IN 1944



### It provides training in five military specializations:

- Maintenance and repair of aircraft, helicopters, aircraft engines,
- Maintenance and repair of aircraft armament,
- Maintenance and repair of aircraft equipment, aircraft and helicopters,
- Operation and repair of aircraft electronic equipment, helicopters and aircraft missiles;
- Financial security and economic activities of the troops (the latest graduation was held in 2012.).

# Post-graduate courses

In 1944 the Kuibyshev Aviation Institute introduced a post-graduate course "of mechanical, physical and technical processes, machines and tools". Currently, it is training full-time graduate students and part-time forms of education and candidates for a PhD degree in 32 specializations.

### POSTGRADUATE ACADEMIC SPECIALIZATIONS INCLUDE:

- 01.02.01** Theoretical Mechanics\*
- 02.01.05** Fluid, gas and plasma mechanics\*
- 01.02.06** Dynamics and strength of machines, devices and equipment \*
- 01.04.01** Devices and methods of experimental physics \*
- 01.04.03** Radio physics
- 01.04.05** Optics \*
- 01.04.06** Acoustics \*
- 02.00.05** Electrochemistry
- 05.02.07** Techniques and facilities for mechanical and physicotechnical processing
- 05.02.09** Techniques and machines for forming operations\*
- 05.02.22** Industrial engineering (for various industries)\*
- 05.02.23** Standardization and product quality management\*
- 05.07.02** Design, engineering and manufacturing of aircraft\*
- 05.07.03** Aircraft robustness and thermal conditions\*
- 05.07.05** Aircraft heat and electrojet engines and power plants\*
- 05.07.07** Inspection and testing of aircrafts and aircraft systems\*
- 05.07.09** Aircraft dynamics, ballistics, and motion control\*
- 05.11.17** Devices, systems and products for medical purposes
- 05.12.13** Telecommunications systems, networks and devices
- 05.13.01** Systems analysis, information control and processing (Engineering systems and communication)\*
- 05.13.05** Components and devices of computer science and control systems\*
- 05.13.12** Computer-aided design systems (technical systems)\*
- 05.13.17** Theory of information science\*
- 05.13.18** Mathematical simulation, numerical computing, and program systems\*
- 05.16.01** Metal science and heat treatment of metals and alloys
- 05.16.05** Metal forming
- 07.00.02** National history

**08.00.05** Economics and management of the national economy (for various industries and fields, including: economics, organization and management of companies, industries, and complexes)\*

**08.00.10** Finance, money circulation and credit\*

**08.00.13** Mathematical and instrumental methods in economics\*

**09.00.11** Social philosophy

**13.00.08** Theory and methods of vocational training

# Doctoral Studies

The centre for doctoral studies has been functional since 1992. At present it is training PhD students in three research areas:

**01.02.06** Dynamics and robustness of machines, devices, and equipment\*

**05.13.05** Components and devices of computer science and control systems\*

**05.13.18** Mathematical simulation, numerical computing, and program systems\*

The dissertation committee rewarding the degree of a candidate of science (the first level of doctoral degree) was first set up at Kuibyshev Aviation Institute in 1962 by the written order of the Ministry of Higher and Secondary Vocational Education of the USSR. Since 2002 seven dissertation committees have been appointed and re-appointed in SSAU (the \* sign indicates the specialties that have dissertation committees).

# EDUCATION THROUGH RESEARCH

Science the very first year the educational process was carried out along with the science research in aircraft technologies, and later in aerospace technologies. Until 1958 the science research of the university departments was performed in cooperation the industry, and only several departments performed their research under business contracts. The establishment in 1958 the country's first industrial research laboratories which were equipped with the research and production facilities by the plants was the major boost for the university science and research development. SSAU has a long term fruitful cooperation with Russian academy of science. In SSAU there was established Institute of image processing of Russian academy of science. Member of the Russian Academy of Sciences Shorin V.P. is the head of Samara science center of Russian academy of science.

To coordinate the research and educational activities of SSAU departments, which carry out training of highly qualified personnel and research and development work in a specific science field, in 2006-2012 in SSAU were established Science-Research Centers in the following fields:

- Mathematical fundamentals of diffraction optics and image processing (supervisor- Member of the Russian Academy of Sciences Shorin V.P.).
- Laser system and technologies (supervisor- Member of the Russian Academy of Sciences Shorin V.P.).
- Computer-aided design and processing (supervisor – prof. Ermakov A.I.).
- Nanotechnology (supervisor – prof. Paveliev V.S.).
- IT-technologies (supervisor – prof. Fursov V.A.).
- Computer-based optics (supervisor – prof. Kazanskiy N.L.).
- Vibro-acoustics of machines (supervisor – prof. Shakhmatov E.V.).
- Small spacecraft design (supervisor – prof. Salmin V.V.).
- Aerospace engineering (supervisor – prof. Tkachenko S.I.).
- Gas-dynamic research (supervisor – prof. Matveev V.N.).
- Chromatography analysis (supervisor – prof. Platonov I.A.).
- Physics of metals and forming process (supervisor – Member of the Russian Academy of Sciences Grechnikov F.V.).
- Physics of nonequilibrium open system (supervisor – prof. Zavershinsky I.P.).

With the modernization of material and technical base of university departments, which was carried out under the program of SSAU development "National research university", project "Education" and the project of university innovative infrastructure development in SSAU was created the network of science and research equipment centers for common use:

- "Space geo-informatics".
- "Inter-department educational and research center of CAM-technologies".
- "Samara inter-university media-center".
- "Nanosized photonics and diffractive optics".
- "Inter-department laboratory of rapid prototyping".
- "Research and development center of laser systems and technologies".
- International Research and development center for pulse-magnetic processing of materials.



Science-Research Center "Small spacecraft design": a mockup of "AIST" satellite – common project of SSAU and State research and production space center "Progress". Was successfully launched on April 2013. Photo: Student satellite "AIST" testing.



Inter-department educational and research center of CAM-technologies.



Photo of Kuybyshev square, processed in CCU "Space geo-informatics" made by GeoEye satellite on April 4, 2011.

# INNOVATION PROGRAMME

In May 2006 Samara State Aerospace University won a competition within the national priority project "Education" among Russia's higher educational establishments implementing innovative educational programmes. SSAU's programme named "The Development of a Competence Centre and Training of World-Class Specialists in the Field of Aerospace and Geo-Information Technologies" was highly appreciated by specialists and the competition board. The programme comprised three interrelated projects: 1. Comprehensive training of world-class specialists in the aerospace field by means of the end-to-end use of current information technologies (CAE/CAD/CAM/PDM). 2. Introducing level-based system of training manpower in the field of space information technologies and geo-information. 3. Developing the system of further vocational education.

Among the indicators of succeeding in the objectives set by the innovative educational programme are the increased demand for the university graduates on the part of industrial companies; the growth of the number of students involved in research work (according to the materials of regular students' conferences called "Korolevskie Chteniya" (Korolyov's Readings); wider co-operation with a larger number of foreign companies (Boeing, NetCracker Technology Corporation, Alcoa, Camozzi and others); increased number of joint research with foreign partners. The university graduates are in great demand with companies, organizations of all types of ownership, and financial structures.

The university fulfils orders of the government of Samara Region and municipal authorities on contract-based customized specialist training.

The implementation of the Programme has significantly accelerated the fulfillment of the university's strategic development plan, strengthened its ties with the region's industrial, research and state institutions. The Programme outcomes have made it possible – in a number of aspects (such as availability of the adequate equipment and software, refresher training of specialists) – to achieve the level foreseen by the strategic plan for 2010 and 2012 and to retain leadership in training world-class specialists in the field of aerospace and geo-information technologies.

Among the most significant results obtained during the Programme implementation is the replenishment of the university's facilities with new equipment and devices. Among the complexes of equipment introduced into the university's research and training activities are: the Earth remote probing receiving station for the centre of space geo-information, electronic microscopes and equipment for study-

ing materials properties, machining centres, machine-tools, measuring equipment for the centre of CAM technologies and many others.

Several departments and divisions have been fully re-equipped. The laboratory equipment of the natural science departments (Physics, Chemistry, Mathematics, Electrical Engineering) has been drastically upgraded. Along with the running repairs, over 70 premises specially prepared for placing the equipment under the Programme, have been renewed. Most training courses have been stocked with the developed and purchased new courseware.

Further training for the university's academic and non-academic staff has greatly intensified.

The university structure has also changed: the Programme implementation period has seen the establishing of 12 new research and education centres, the faculty of basic training and fundamental sciences, the department of nano-engineering and general information science.

What makes the Programme unique is that it is directly targeted at the aerospace cluster of Samara Region.



The research and education centre of nanotechnologies is equipped with the ultra-high vacuum complex NANOFAB-100.



The laboratory of mechatronics and robotics.



The laboratory of additive technologies was set up in 2011. The 3D-printer Eden 350 is printing models of any complexity.

# THE DEVELOPMENT PROGRAMME OF THE NATIONAL RESEARCH UNIVERSITY

The priority directions of the development of SSAU (national research university) defined by the Programme of the university's development for 2009-2013 in the field of education and research, are aerospace science, technologies, and engineering. The Programme is aimed at the aerospace industry and its development. The Programme's peculiar feature is its focus on the application of information technologies. The university's key task is to transfer to computer technologies: computer modeling and product information support ("Virtual Aircraft" and "Virtual Engine"); development of advanced manufacturing and space geo-information technologies; conducting scientific research, and training world-class specialists, using supercomputer and grid systems for research and education.

In the course of carrying out the Programme measures the programmes of the primary, secondary and higher professional education are being integrated, which makes it possible to implement complex educational trajectories in training specialists beginning with professional training in working professions, then in the framework of secondary professional education, higher professional education (baccalaureate –specialties – magistracy) and finishing with studies at post-graduate and doctoral courses (technician – bachelor – specialist – master – postgraduate student – doctorate student).

New forms of developing innovations in research have come into being at the University. In accordance with the Federal Law 217-73 of August 2, 2009 the University became a founder of several small innovative enterprises. The "know-how" and technologies initially developed for the needs of aerospace industry were presented by the University as the founding contribution according to the license agreements.

New educational programmes are being developed on the basis of the standards established by the National Research University in accordance with the principle "education through research".

The curricular of the magistracy in addition to academic disciplines involves carrying out research by the undergraduate students. They publish the results of their research, take part in scientific conferences. About 30% of magistracy graduates continue as postgraduate students.

### REGIONAL PROGRAMMES

The University carries out work in accordance with the resolution of Samara region government of October 27, 2010 №545 "Measures of implementing innovation and science – and – engineering projects aimed at assisting the implementation of the programme of development of the National Research University – Samara State Aerospace University in 2011-2013 on the territory of Samara Region".

### AEROSPACE CLUSTER

SSAU is a research – and – educational center of the aerospace cluster of Samara region. In 2012 it won the federal competition in selecting pilot programmes of developing innovation territorial clusters. In the five years to come the participants of the aerospace cluster will get state support for the development of the programme projects (refining of rocket engine NK-33, innovative work on the launch of nanosatellites using the existing boosters, the creation of a single information space for the cluster enterprises).



In 2010 a supercomputer centre "Sergey Korolyov" was set up on the basis of a interuniversity media centre.



Research Institute of aviation structures: investigation of composite materials on a servo-hydraulic test unit.



Nobel Prize Winner Zh.I. Alfyorov at the SSAU Centre of Aircraft engine history.

# SSAU INTERNATIONAL RELATIONS

SSAU started its international activity in 1990 when it received the certificate of a participant of foreign economic activity, was registered at the Ministry of Foreign Affairs of the Russian Federation, opened a balance foreign currency account and introduced changes regulating international activity into the charter. Since that time the University has been continuously finding foreign partners and declares itself as one of the Russia's leading universities on the international arena.

Information support of research carried out at the university, joint research with foreign scientists, promotion of science-intensive technologies to the world market, exchange of scientific and engineering information, holding conferences and workshops, joint monographs and scientific papers, various kinds of student exchange are important directions of the University's international activity.

The University is well known abroad, it has direct scientific, engineering and pedagogical ties with similar institutions. Thus, in different years the University entered into agreements with the universities of China (Harbin Politecnical Institute, Beijing Aerospace University, Beijing Politecnical University, North-West Politecnical University, Bradley University (USA), Sofia Technical University (Bulgaria), Stuttgart Technical University (Germany), Berlin Technical University (Germany), Carlow Technical University (Ireland), Lulea University (Sweden), Delft Technical University (Netherlands), Higher State School of aircraft design engineers ENSICA (France), National Aerospace University "Kharkov Aviation Institute" (Ukraine), a protocol of intention has been signed with the China Association of Aviation and Cosmonautics.

The programme of double degrees has been successfully implemented with Harbin Politecnical Institute (China) since 2010.

The University participates in the student project jointly with Higher Institute of Aviation and Cosmonautics (Institut Supérieur de l'aéronautique et de l'espace – ISAE) within the framework of participation in the events of C'Space organized by the Space Agency of France CNES that are to take part in Biscarross (France) at the end of August 2012 and in 2013. The aim of the project is to launch the French atmospheric probe CanSAT as the payload of the model of Russian rocket "Soyuz-2" designed and made by SSAU students under the supervision of their teachers.

Students from Bangladesh, Bulgaria, India, Iran, Cameroon, Kenya, China, Costa Rica, Lebanon, Mauritius, Madagascar, Morocco, Nigeria, Yhana, Oman, Pakistan, Peru, Senegal and Sri Lanka were and are trained at the University according to directives of Russian Ministry of Education and on the contract basis. Students from Bradley

University, Harbin Politecnical Institute, Higher school of Aeronautics ENSICA are trained here according to direct cooperation agreements.

The University has a center of Russian language teaching for international students and prospective school leavers. Every year 80 faculty members and staff have business trips abroad to participate in scientific and language courses, conferences, symposia. The University also regularly invites scientists from leading universities to deliver lectures and seminars.

Achievements SSAU are demonstrated at MAKS Aviation Show (Russia) and Le Bourget (France), and are exhibited in Austria, Germany, China, Malaysia, Pakistan, Singapore, USA, and Switzerland. Scientific developments of SSAU were awarded the prestigious international exhibitions.

SSAU is home for International Summer Space School which was established in 2003 and is held annually. The overall objective of the School is to involve young people in the development and implementation of experiments in space, with a view of obtaining new fundamental knowledge and applied technologies based on utilization of micro/nanosatellites. During the School young people are able to share ideas and results, listen to lectures and practices of leading scientists and experts in the field of space technologies and space experiments.



Conference hall of SSAU, international conferences, forums are held here.



Professor Dieter Schmitt, Technical University of Munich (left) delivered author lectures on aviation in SSAU.



"Soyuz-2" rocket mockup (right), developed by students of SSAU – Air Show at Le Bourget in France (2011).

# CULTURAL AND CAMPUS LIFE

One of the most important functions of the university is to create the conditions under which along with getting professional knowledge a student becomes an active citizen.

Culture Center of Samara State Aerospace University gives students the opportunity to develop and improve their creative abilities. It consists of student theaters of pop miniatures (STEM) and different clubs of cultural activities (musical, dance, photo clubs etc.).

During the year there are held several university events: Student's Day, "Student's spring" festival, autumn ball, Lukachev St. celebrations, student rites of passage, literature and ethnic festivals, and sport events: "Ski-track of Russia" and "Golden autumn".

## CONFERENCES & EVENTS

There are conferences and workshops which are traditionally held on the basis of our university.

In 2012-2013 years in SSAU there were organized the following conferences

- Youth Reading Conference named after S.P. Korolev» (October 2012)
- Annual Student Science Conference of SSAU (February 2013)
- Student Science Conference of Samara Region (spring of 2013)
- International Summer Space School

In addition, students involved in research activities participate in the conferences held in other cities and even abroad. More information you can find at the Council of Young Scientists and Specialists

## UNIVERSITY MEDIA

SSAU student television is broadcasted on the displays all around SSAU campus as well as on the Internet. The core content of the broadcasting is the video-blog "Bort №3". If you have interesting ideas, want to shoot or cut the reportages or even be a reporter, welcome to "small screen" as well as to the "Bort №3".

There is radio station operated by the SSAU students.

Official SSAU newspaper «Polet» (Flight) has been published since May 1958. Once in two weeks newspaper «Polet» appears on the reception desks and in the hostels. It can be also seen on the university web site in the pdf-format. There are a lot of young and creative writers in the newspaper who are still students, and, as a result, topics of the articles correspond to the interests of the students themselves.

## PHYSICAL EDUCATION AND SPORT

Physical education lasts for first three years of studying in Samara State Aerospace University and takes place in special sport centers. Students who have problems with their health can enroll at a special medical team. At the beginning of each semester all students must pass the Medical Examination. Students who enrolled at the University teams of various kinds of sport are exempt from obligatory training.

At the beginning of the first semester all students join one of the following sports represented in SSAU: Swimming; Football; Volleyball; Basketball; Sambo and judo; Aerobics (rhythmic gymnastics); Gymnastics; Fitness; Sailing; Weightlifting; Track and field athletics; Ping pong; Powerlifting.

Also there are clubs in SSAU: chess club, go(game) club, sky jumping club, tourist club, which includes sub-club of speleology, alpinism, water activities and cyclotourism.

In addition SSAU has its own recreation facility – sports camp "Polet". It is located in a picturesque place on the bank of the Volga River in the vicinity of Stydenuy ravine. Every summer, it holds three sport-and-fitness sessions.



SSAU varsity team "Just Black" – winners of 2010 and 2011 Fitness sport aerobics championship.



"Student's spring" festival gala-concert.

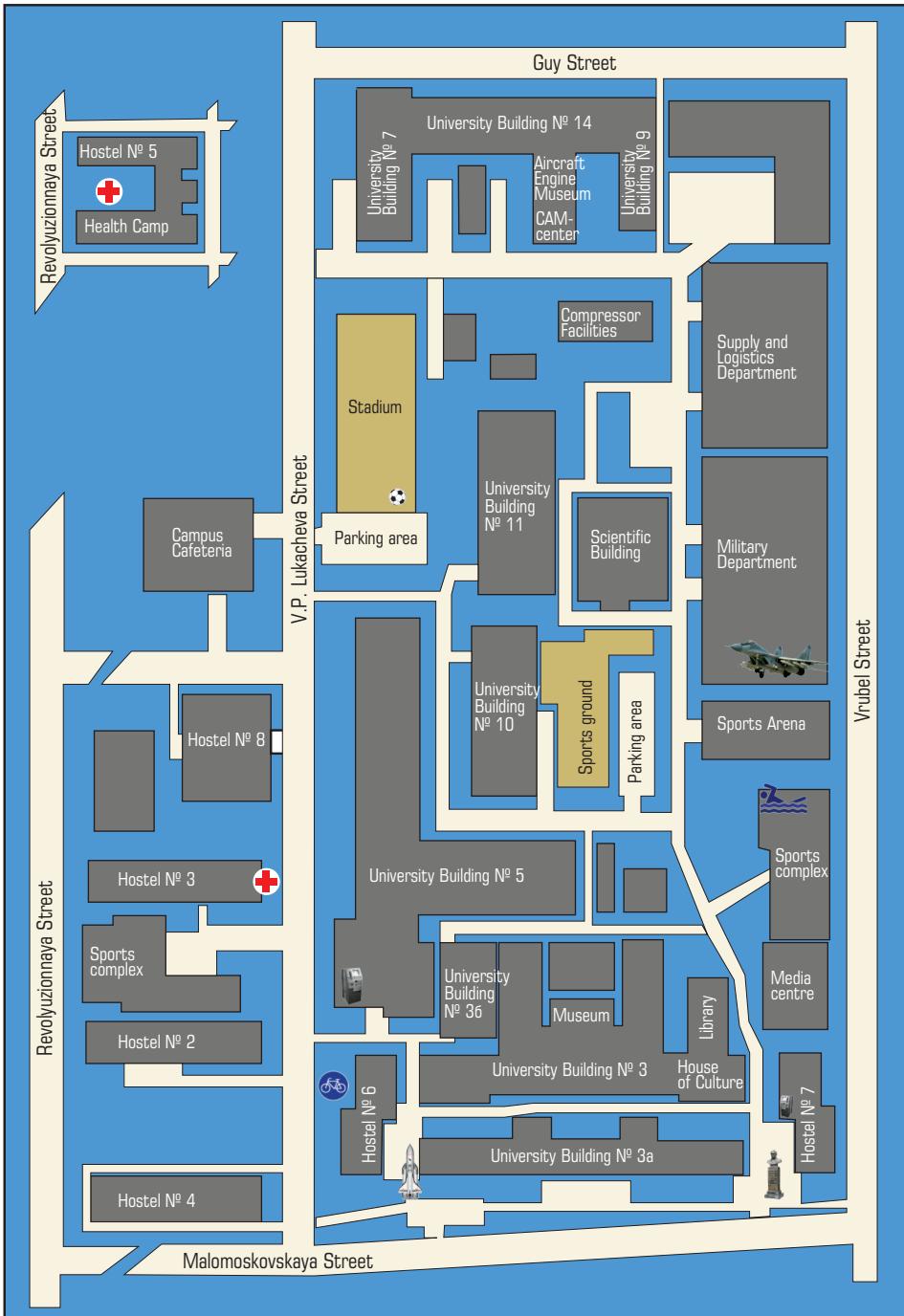


Swimming competition at SSAU pool.



Student's Autumn ball.

# Campus of Samara State Aerospace University – National Research University





## CONTACT INFORMATION:

34, Moskovskoye shosse,  
Samara, 443086,  
Russia

Rector: +7-846-3351826  
President: +7-846-3322604  
Fax: +7-846-3351836

E-mail: [ssau@ssau.ru](mailto:ssau@ssau.ru)  
Web-site: [www.ssau.ru](http://www.ssau.ru)