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S. P. Ivanova

THE JINR EDUCATIONAL PROGRAMME IN 2005

Report to the 99th Session
of the JINR Scientific Council
January 19–20, 2006

Dubna 2005

2005 marks the completion of the first 15 years of the JINR University Centre (the UC) existence, which is a reason for reviewing some of its achievements.

During its existence, the UC has become a JINR subdivision that actively cooperates with higher education institutions of JINR Member States and carries a mission of turning out young scientists and engineers. This activity resulted in a decrease in the average age of research staff at the JINR Laboratories, especially the Bogoliubov Laboratory of Theoretical Physics and Dzhelepov Laboratory of Nuclear Problems, where great importance is attached to the support of young specialists.

The UC's activitiy aimed at students and postgraduates, which is partly carried out at the expense of the means provided by the Plenipotentiaries of JINR Member States, has raised the interest in research performed at JINR of students and postgraduates of the following JINR Member States: Bulgaria, the Czech Republic, Poland, Romania, and Slovakia; and increased the number of young researchers in the national teams of these countries. Noted should be the role of the above Member State teams in this activity.

The rightness of the UC's strategic development has been confirmed by an increase in the number of grants to the UC from JINR Member State plenipotentiaries over the years. Thus the UC received grants from the plenipotentiaries of the following countries:

- 2000: Poland;
- 2002: the Czech Republic and Poland;
- 2005: Bulgaria, the Czech Republic, Poland, Romania, and Slovakia.

During the last year, the UC postgraduates made more than 10 reports to major international conferences. The UC postgraduates and alumni are among the JINR prize winner teams.

The Programme of JINR's Educational Activity Development for 2003 – 2009, which was worked out in 2002, got further elaboration. It is based upon the concept of continuous education. The education system aimed at turning out highly skilled young specialists begins with attracting secondary school students to the studies on the basis of a special laboratory practicum.

The UC readily responds to the proposals of new projects in education and itself offers new agreements on cooperation with higher education institutions of the JINR Member States, and promotes their conclusion. 2005 was marked by the following agreements and protocols:

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- An Agreement on Cooperation in Education Programmes was concluded between the Czech Technical University, Prague, and JINR.
- A protocol of intentions was signed with the Institute of Nuclear Physics at the National Nuclear Centre, the Republic of Kazakhstan.
- A protocol with Uppsala University (Uppsala, Sweden) is under preparation.
- A protocol on academic exchanges was signed between the UC and Institute of Theoretical Physics, CAS, China.

An announcement that a special programme of preparing young physicists for work at the CMS project (an initiative by Prof. I.A. Golutvin, Head of RDMS CMS) met a lively response among students and young scientists. A first group of students have been selected on a competitive basis; they have already started attending a special curriculum.

The development of the JINR postgraduate studies is an important component of training highly skilled specialists. Over the past five years, 66 completed the JINR postgraduate programmes; 43 of them were taken on the JINR staff. 21 have defended their Candidate's theses.

The UC carries out its regular activities according to the goals set by the JINR Plan for Research and Cooperation (Topic 1026-98/2008 headed by A.N. Sissakian and S.P. Ivanova) and resolutions of the Sessions of the JINR Scientific Council and Programme Advisory Committees on Nuclear and Condensed Matter Physics.

The UC Council headed by Prof. A.N. Sissakian plays an important role in coordinating the JINR-based educational programmes.

Graduate students of Moscow Engineering Physics Institute (MEPhI), Moscow Institute of Physics and Technology (MIPT), and a number of higher education institutions of Russia and JINR Member States attend at the UC full-time programmes during the final two or three years of their studies. Their curricula are prepared jointly with their home departments and expanded to reflect the following fields of research carried out at JINR Laboratories: nuclear physics, elementary particle physics, condensed matter physics, theoretical physics, technical physics, and radiobiology.

Table 1 shows the distribution of the UC students over their home institutions as of 2005.

Table 1

Higher education institution	Number of its students at the UC in 2005
Moscow State University (MSU)	17
Moscow Engineering Physics Institute (MEPhI)	13
Moscow Institute of Physics and Technology (MIPT)	24
Institutions of JINR Member States (Armenia, Belarus, Russia, Ukraine)	46
Total	100

Also on the basis of the UC, 192 students of Moscow Institute of Radiotechnology, Electronics, and Automation (MIREA) attend full-time programmes at the Department of the Electronics of Physics Installations and Department of Information Technologies for Computation Systems.

The courses offered at the UC include Elementary Particle Physics, Relativistic Nuclear Physics, Theory of Fundamental Interactions, Theory of Nuclear Reactions, Atomic Nucleus Structure, Introduction to the Theory of Accelerators, Experimental Nuclear Physics, Standard Model, Modern Methods of Detecting Nuclear Reactions and Nuclear Radiation, Programmable Logical Units, Fundamentals of Radio Engineering, Digital Units and Their Applications, Electronic Methods of Detecting Ionizing Radiation, Radiation Safety and Environment Protection, Mathematical Statistics, Object-Oriented Programming in C++, Computing in High Energy Physics, Internet Technologies, Database Management Systems, Telecommunication Systems and World Information Resources, English for Students, and English for Postgraduates.

The UC's equipment has been improved. In 2005, a local computer infrastructure was established on the basis of the UC's resources to teach Grid technologies. The UC cluster includes a P4 computer (2.4 GHz, 512 Mb RAM, and a disk of 80 Gb) and five P4 computers (3 GHz, 1 Gb RAM, and a disk space of 2x80 Gb). The computers of the cluster are run under Linux Red Hat 9.0. The operating system was extended to solve, in particular, the following tasks:

- teaching users to work in a Grid environment;
- teaching Grid technologies to system administrators;
- debugging Grid services in various Grid environments.

Within the framework of the LCG and EGEE projects, the UC cluster hosted Grid technology classes for students and courses for Grid users and Grid system administrators.

In 2005, the equipment of one of the UC's four computer classrooms was upgraded: installed were eight Celeron computers (2.8 GHz, 512 Mb RAM).

Within semesters, the UC offers short lecture courses on modern achievements in physics and related areas to its students and postgraduates. These courses form the lecture cycle "Modern Problems of Natural Sciences." In 2005, the following lectures were given within this cycle:

- Prof. G. Stratan (Romania). Einstein: a Person, a Thinker, a Public Figure.
- Prof. V. Pervushin (BLTP, JINR) and Prof. A. Zakharov (ITEP). Frames of Reference in the General Theory of Relativity and the Tomography of the Universe.
- Prof. V.A. Naumov (BLTP, JINR). Cosmic Rays and Neutrino.

The list of the UC's publications for its students and postgraduates extended to include the following textbook:

I.N. Ivanov and G.V. Trubnikov. Introduction to the Theory of Accelerators (УНЦ-2005-28, in Russian).

Noted should be the active participation of JINR's scientists in the educational process. In 2005, the UC's faculty numbered 21.

The JINR Educational Programme is realized and developed in close cooperation with leading higher education institutions of JINR Member States. The UC has agreements on cooperation in education with a number of higher education institutions of Russia and JINR Member States, including MEPhI; MIPT; MIREA; A.D. Sakharov State Ecological University in Minsk (Belarus); Belgorod State University; Lipetsk State Technical University; Tula State University; P.O. Sukhoi State Technical University in Gomel (Belarus); Belarus State University; T.G. Shevchenko National University in Kiev (Ukraine); Yerevan State University (Armenia); Sofia University (Bulgaria); N. Rilsky State South-Western University (Blagoyevgrad, Bulgaria); International Postgraduate Studies at the Institute of Nuclear Physics (Krakow, Poland); and the Czech Technical University in Prague (the Czech Republic).

In 2005, the UC-based Department of High Energy Particle Interaction Physics at the Faculty of General and Applied Physics, Moscow Institute of Physics and Technology (Head of Research: Prof. A.N.Sissakian, JINR Vice-Director; Head of the Department: Prof. G.A.Shelkov, Chief of the Division of Counter-Beams at the Laboratory of Nuclear Problems), turned out 13 Masters of Science. During 13 years of its existence, 46 of its graduates took a job at JINR.

On June 14, 2005, the sixth-year students of Moscow Institute of Physics and Technology completing their education at the UC defended here their master's theses.

The Regulations on Students' Practical Work, which were accepted in 2005, will allow students to be immediately involved in the realization of the most important parts of the Institute's research programme. Due to the change of generations, required is a detailed analysis of the Laboratories' needs of specialists in the most topical fields of research. Additional opportunities of attracting students to this research must be looked for. In particular, the International Summer Student Practice in JINR Fields of Research is designed to play this role. In 2005, a second Practice was held.

The Second International Summer Student Practice in JINR Fields of Research marked the end of the summer practice period. 38 students attended the Practice instead of planned 30. Unfortunately, it was impossible to reply positively to all the applications, which confirms the rightness and timeliness of such activities aimed at more young people taking a job at the Institute.

From July 12 to August 4, the Practice was attended by students from the Czech Republic (13), Poland (8), Romania (7), Slovakia (6), Belarus(2), Bulgaria, and Russia, who had passed competitive selection.

The Practice programme included lectures and work at the following JINR Laboratories and subdivisions: DLNP, LIT, FLNP, FLNR, SCAR, and UC. The following lectures were given:

V.A. Karnaukhov (DLNP). Nuclear Phase Transitions in Hot Nuclear Matter.

V.N. Shvetsov (FLNP). Neutron Logging in Space: Seeking Water on Mars and Other Planets.

V.G. Egorov (DLNP). Investigation of Neutrino Properties in Radioactive Decay.

M.V. Frontasyeva (FLNP). Nuclear and Related Analytical Techniques for Studying the Environment.

V. Bednyakov (DLNP). Neutrino Masses and Mixing within Supersymmetry without R-parity.

I. Stekl (Prague TU). Introduction to Astroparticle Physics.

V.I. Furman (FLNP). Introduction to the Physics of Nuclear Fission.

G. Musulmanbekov (LIT). Applicaltion of Advanced Visualization in Scientific Research.

C. Oprea (FLNP). Analytical Methods Based on Charged Particle Beams.

O. Smirnova (DLNP). Grid and its Applications.

Yu.P. Gangrsky (FLNR). Laser Spectroscopy at Radioactive Nuclei Beams (the DRIBs project, Flerov Laboratory of Nuclear Reactions).

V. Skoy (FLNP). The Time-of-Flight Method in Neutron Physics and its Applications.

I.Stekl, Z. Janout (Prague TU). Study of Microworld.

V. Skoy (FLNP). Methods of Neutron Polarization and Their Applications.

V. Gerdt (LIT) Introduction to Quantum Computing.

An excursion was organized by Prof. A.A. Petrukhin of MEPhI to the NEVOD research centre at this institute. The final part of the Practice was held jointly with the International Summer School on Nuclear Theory and Astrophysical Applications hosted by the Laboratory of Theoretical Physics (Head of the Organizing Committee: V.V. Voronov).

At the end of the Practice, all its participants prepared the reports that were presented in the Czech Republic and Poland at the autumn seminars on the Practice.

On the basis of the UC, JINR offers postgraduate programmes in the following ten specialties in physics and mathematics:

01.04.16 – Nuclear and Elementary Particle Physics;
01.04.02 – Theoretical Physics;
01.04.20 – Charged Particle Beam Physics and Accelerator Techniques;
01.01.07 – Computational Mathematics;
01.04.07 – Solid State Physics;
01.04.01 – Physics Experiment Techniques, Instrument Physics, and Physics Research Automation;

05.13.11 – Mathematical Support of Computers, Computational Complexes, and Networks;
05.13.18 – Mathematical Modelling, Numerical Methods, and Software Complexes;
01.04.23 – High Energy Physics;
03.00.01 – Radiobiology.

In 2005, JINR total postgraduate enrolment was 66. Table 2 shows the distribution of the postgraduates over the JINR Laboratories.

Table 2

	Number of postgraduates, 2005
Bogoliubov Laboratory of Theoretical Physics	18
Dzhelepov Laboratory of Nuclear Problems	18
Flerov Laboratory of Nuclear Reactions	4
Veksler and Baldin Laboratory of High Energies	9
Frank Laboratory of Neutron Physics	4
Laboratory of Particle Physics	3
University Centre	1
Laboratory of Information Technologies	8
Laboratory of Radiation Biology	1
Total	66

The distribution of the postgraduates over the specialties is shown in Table 3.

Table 3

Specialty	**Number of postgraduates, 2005**
Nuclear and Elementary Particle Physics	26
Theoretical Physics	17
Charged Particle Beam Physics and Accelerator Techniques	1
Solid State Physics	3
Physics Experiment Techniques, Instrument Physics, and Physics Research Automation	9

Mathematical Support of Computers, Computational Complexes, and Networks	1
Mathematical Modelling, Numerical Methods, and Software Complexes	7
High Energy Physics	1
Radiobiology	1

Up to now, 163 people have completed the JINR postgraduate programmes. In 2005, there were 15 postgraduates at the UC from JINR Member States (seven from Armenia, four from Belarus, three from Ukraine, and one from Uzbekistan).

Keeping in line with JINR's international character, the UC actively develops its international cooperation. Especially busy are the UC's relations with universities of Belarus, Bulgaria, the Czech Republic, Poland, Romania, Russia, Slovakia, and Ukraine. On the basis of the UC, institutes and universities of JINR Member Sates unite their efforts in education activities. In 2005, JINR was visited by 68 students from Poland, 30 from the Czech Republic, nine from Romania, nine from Slovakia, seven from Belarus, six from Ukraine, four from Bulgaria, one from Italy, one from Uzbekistan, and eight secondary school students from Poland. Besides coming on acquaintance visits to the JINR Laboratories, the students took the physics practicum and participated in research carried out at JINR.

One of the UC's missions is the organization and conduction of international scientific schools and training courses. For students and postgraduates from both the UC and JINR Member States, schools, which have now become regular, proved to be very useful.

In 2005, prolonged was a joint project by the UC and the Institute of Theoretical Physics of Giessen University (Germany), which is supported within the Leonard Euler Scholarship Programme of the German Academic Exchange Service (DAAD). In April – May 2005, the UC Director Prof. S.P. Ivanova gave a course of theoretical atomic physics at Giessen University (Germany) in the capacity of an invited lecturer. At the 98th session of the JINR Scientific Council (2–3 June 2005), this cooperation was presented by Profs. W. Scheid and S. Ivanova at the Round Table "JINR's Cooperation with German Research Centres, Universities, Organizations and Foundations in Science and Education" in the report "Giessen – BLTP – UC Collaboration in Nuclear Physics: Research and Education".

Specially noted should be the development of the UC's contacts with Polish universities. Thanks to the Bogoliubov – Infeld Programme, JINR continues its active cooperation with Polish education institutions:

- On 15 January – 6 February, postgraduates of the Institute of Nuclear Physics (Krakow), Polish Academy of Sciences, Ewa Juszynska and Piotr Tracz stayed at the Laboratory of Neutron Physics participating in experiments with neo-hexanol isomers under the supervision by the Laboratory's staff member I. Natkaniec.
- On 31 January – 11 February, eight pupils of general education lyceums from Poznan, Leszno, and Tarnowskie Gory and their teachers were on a visit to the UC. On the basis of the UC's physics laboratory for secondary school pupils, the UC faculty member Dr. I.A. Lomachenkov had prepared for them a programme of physics classes, which included lectures and practical work. The pupils studied the laboratory equipment and performed several practical exercises.
- Dorota Nowak, a postgraduate at the Institute of Physics, Adam Mickiewicz University (Poznan), was participating for three months beginning with 2 February in an experiment at the NERA-PR spectrometer at the Frank Laboratory of Neutron Physics under the supervision by the Laboratory's staff member I. Natkaniec.
- Szymon Myalski, a student of the Mining and Metallurgy Academy (Krakow), was preparing his diploma thesis from 7 March to 7 April, and from 11 August to 29 August under the supervision by A.G. Artyukh (the Flerov Laboratory of Nuclear Reactions).
- From June 17 to June 30, 12 students of Adam Mickiewicz University (Poznan) were on a visit to the UC. They attended special lectures at the Laboratory of Information Technologies and the Flerov Laboratory of Nuclear Reactions.
- From June 30 to July 11, 19 Polish students attended the Third International Summer Student School on Nuclear Physics Methods and Accelerators in Biology and Medicine.
- From July 12 to August 4, eight Polish students attended the Second International Summer Student Practice in JINR Fields of Research.
- From September 29 to October 8, six students of Adam Mickiewicz University (Poznan) were on a visit to the UC and the Laboratory of Radiation Biology.

• From October 19 to October 21, seven students of Warsaw University of Technology were on a visit to the UC and JINR Laboratories.

In 2005, JINR was visited by a total of 68 students, 8 pupils, and 8 teachers from Poland.

On June 30 – July 11, the Third International Summer Student School on Nuclear Physics Methods and Accelerators in Biology and Medicine was held in Ratmino near Dubna. The Organzing Committee included S.P. Ivanova (JINR, the Chair), T.A. Strizh (JINR, the Vice-Chair), T.A. Yudina (JINR, the Secretary), W.Nawrocik (Poland), I. Stekl (the Czech Repubilc), C.Granja (the Czech Republic), W.Chmielowski (JINR), A.Kovalik (JINR), J.Kliman (JINR), A.Chernyayev (Moscow State University (MSU)), V.Belyayev (Moscow Engineering Physics Institute (MEPhI)), and JINR's G. Trubnikov, Ye. Russakovich, S. Negovelov, and I. Semenyushkin.

Academician V.G. Kadyshevsky noted in his School opening speech that in recent time medicine attaches increasingly great importance to the use of achievements of physics, especially nuclear physics. The wide medical use of ionizing and non-ionizing radiation, radionuclides, gamma sources, electron and proton accelerators, and computer tomographs has turned medical physics into a strategic weapon of medicine.

The participants of the School were welcomed by Prof. W.Nawrocik, Chairman of the JINR Programme Advisory Committee on Condensed Matter Physics, a permanent member of the School's Organizing Committee, and Chair of the Organizing Committee of the Second School (Poznan, Poland). The School's traditional organizers are the UC, Adam Mickiewicz University (Poznan, Poland), the Czech Technical University in Prague, and MSU. The School's students came from Belarus, Bulgaria, the Czech Republic, Poland, Romania, Russia (MSU, MEPhI, and Novosibirsk Institute of Nuclear Physics), Slovakia, and the UC. The first two schools were held in 2001 and 2003; they were highly appraised by students and postgraduates; so there was an influx of applications for attending the Third School. The most numerous delegations came from Poland, the Czech Republic, and MSU. For the first time, there were the School participants from Bulgaria and Slovakia. The audience numbered 75 in all; there were 21 lecturers.

The experience of the previous Schools and active work of the Advisory Committee members (first of all, Profs. G. Beyer and

S. Dmitriev) resulted in the notably well-balanced programme of the Third School. And, of course, the lecture cycle of the School was successful to the most extent thanks to highly skilled specialists of different countries.

The first four lectures by Prof. G. Beyer, "Isotopes in Medicine: Requirements, Production, Application and Prospects," became an excellent introduction to the subjects of the School and prepared the audience for the further lectures. The lectures by Prof. V.Ye. Aleinikov, "Basic Concepts of Ionizing Radiation Dosimetry," introduced the audience to the fundamentals of dosimetry.

After this acquaintance of the audience with the School's subjects, the following lectures were given: N.N. Blinov (MEPhI, Russia), "Modern X-Ray Techniques"; G.Ye. Kodina (Russia), "Modern State of the Medical Use of Radioisotopes in Russia"; T.Holy (the Czech Republic), "Advanced Detector Techniques for X-Ray and Neutron Tomography"; S.M. Varzar (MSU, Russia), "Development of New Proton and Electron Beam Therapy Techniques"; P.Kukolowicz (Poland), "Mathematical Basis of Radiotherapy"; A.Wojcik (Poland), "Biological Basis of Radiotherapy"; J.Ruzicka (Slovakia), "The Cyclotron Centre of the Slovak Republic and a Medical Nuclotron Proposal"; H.Homeyer (Germany), "Fast Light and Heavy Ions in Medicine. Materials Analysis and Materials Modifications"; M.Beran (the Czech Republic), "Therapeutic Effects of Beta Radiation in Nuclear Medicine"; O. Jaekel (Germany), "Technical State of the Art in Hadron Therapy" and "Treatment Planning for Radiotherapy"; J.Novotny, "Physical and Technical Principles of the Stereotactic Radiosurgery and Radiotherapy with the Leksell Gamma Knife and Linear Accelerator" and "Principles and Application of Gel Dosimetry in Radiation Control"; L. Avramov (Bulgaria), "From Tissue Optic Study to Smart Laser Therapy"; Ye.K. Kozlova (MSU, Russia), "Physical Bases of Using the Pulsed Electric Field for the Diagnostics of the Biological Membrane Hidden Damages"; and M.Radwanska (Poland), "Effective Dose Estimation in Nuclear Medicine Diagnostics". Research being done at JINR's Laboratories that is related to the development of the neutron activation analysis techniques (Laboratory of Neutron Physics) and performance of the medical beam of the cyclotron at the Laboratory of Nuclear Problems was presented in the following lectures by the JINR scientists: M.V. Frontasyeva, "Neutron Activation Analysis for Life Sciences"; G.V. Mitsyn, "Hadron Therapy Complex at the Laboratory of Nuclear

Problems, JINR"; and Ye.I. Luchin, "3D-Conformal Proton Radiotherapy and Radiosurgery of Intracranial Targets."

Concerned with accelerators – specifically, the development of a proton accelerator for medical purposes – was the lecture by a Corresponding Member of the Russian Academy of Sciences V.E. Balakin, "New Generation of Equipment for the Proton Beam Treatment of Oncologic Diseases."

One may suggest that the lecture by Prof. J. Stamenov (Bulgaria), "Health and Environment," hardly fitted with the subjects of the School's lecture cycle. In fact, not only it did, but it also helped the audience to look at using nuclear physics techniques from another point of view and understand the degree of the physics community's responsibility to the society, as well as proposed the use of physics achievements for the environment protection and health.

For the School participants' further work at their home institutions, most of the lectures, with the lecturers' kind permission, have been put up at the School's Internet site, http://uc.jinr.ru/3SummerSchool/lecture.html .

Following the School tradition, students presented their research to the Student Sessions. This School had the greatest number of student reports. At the first School (2001), 12 reports were made; at the second (2003), 31; this time, the School audience members made 42 reports within the School subjects. By tradition, the best reports were selected by the audience themselves. The best three students were Kinga Maria Brzozowska (Institute of Nuclear Chemistry and Technology, Warszawa), Ewa Karolina Szykowna (AGH University of Science and Technology, Krakow), and Mariusz Pietrzyk (Jagiellonian University, Krakow).

The student reports will be published in the Proceedings of the School (E18-2005-195).

In the School participants' opinion, its programme was elaborated quite good. They found most of the lectures absorbing and useful. In their own words, they got a more generalized idea of the world and began to understand what, and for whom, is being done in this area of knowledge. To the organizers of the School, its most important result is its participants' intention to attend further schools and, which is yet more important, to come to JINR for practice and performing their diploma and dissertation theses.

In conclusion, the School organizers expressed their deep gratitude to the plenipotentiaries of Belarus, Bulgaria, the Czech Republic, Poland, Romania, and Slovakia at JINR, who allotted special grants for the organization of the School. The School was also supported by a grant from the Russian Foundation for Basic Research.

The UC has a special laboratory for demonstrating experiments in physics to secondary school students. Two groups of the 10th and 11th-year students of Dubna's secondary schools attend classes at the UC three times a week. They perform exercises of the laboratory practicum "Experimental Methods in a School Course of Physics."

On May 30 – June 10, 2005, Dr. I.A. Lomachenkov, a UC lecturer, visited Adam Mickiewicz University (Poznan, Poland) at the invitation of its Physics Faculty authorities. The mission was aimed at discussing with Polish colleagues the exercises of the laboratory course of general physics for students and secondary school pupils. A number of new demonstration experiments were discussed with Prof. W. Nawrocik and other members of faculty. The visit took place within the Bogoliubov – Infeld Programme.

In February, pupils of the eighth and ninth years of the school with the Czech Embassy in Moscow came for a visit to Dubna. They had excursions to JINR's basic facilities. At the UC's physics laboratory for secondary school pupils, they attended lectures and practical demonstration classes.

In 2005, the UC continued the training, retraining, and improvement of the qualifications of working staff and specialists.

JINR's five new staff were trained in allied professions; nine JINR's staff were trained in a second profession. At the JINR courses training personnel for facilities that are within the jurisdiction of the Federal Technical Inspection, 90 JINR's staff and 15 staff of Dubna's organizations were trained and certified.

In 2005, 28 JINR's staff were trained and certified to operate and maintain machines, mechanisms, and pressurized vessels.

16 JINR's staff improved their qualifications at special seminars organized by education institutions in Moscow, St. Petersburg, Obninsk, and Ivanovo.

In 2005, 35 students of State Professional Lyceums No. 67 and 95 had practice in their specialties at JINR.

The UC-based courses training entrants to MEPhI continued to function in 2005. In the Academic Year 2004–2005, their enrolment was

seven students of the city's secondary schools. All those who completed the courses held throughout the Academic Year 2003–2004, entered MSU, MEPhI, MIPT, and Dubna University.

Reports on the JINR Educational Programme were presented to the –

- Fifth International Conference on Nuclear and Radiation Physics (26 – 29 September, Almaty, Kazakhstan);
- Second Eurasian Congress on Medical Physics and Engineering "Medical Physics 2005", Moscow, 21 – 24 June;
- China Workshop on Heavy Ion Physics (7 – 9 December);
- seminars at Beijing University, the University of Industry (Beijing), Lanzhou University, and Lanzhou HIRFL (China, November – December).

The UC's Internet site (http://uc.jinr.ru) has been regularly updated.