

International Center for Advanced Training in Geodesy, Cartography, Land Administration and Territory Development project

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Keywords: Education, individual training trajectory; education; e-learning; distance training.

Summary

The Centre is being established for the implementation of vocational training and additional vocational training programmes in the field of geodesy, cartography, land administration and territory development. The initiative to create the center belongs to the Moscow State University of Geodesy and Cartography. There are agreements on cooperation in the establishment of this center with other universities from various countries. The University of John Morris of Great Britain (Liverpool), the University of Applied Sciences (Neuebrandenburg, Germany), the University of Architecture and Construction (Sofia, Bulgaria) are ready to participate.

The Centre 's training programmes cover all business activities in these areas. Faculty - highly qualified teachers of leading universities, specialists with many years of practical experience in the field of geodesy, cartography, land administration and territory development. Modern information technologies, multimedia equipment, visiting manuals, methodological materials, educational and technical literature are used in the training process.

The distinctive feature of the center is the possibility of selecting an individual training trajectory, the possibility of selecting a teacher, and the form of training. For the student there is an opportunity to select the necessary courses, having compiled from them an individual program of advanced training. Forms of education - full day learning, e-learning, webinar technology and so on are possible. With a distance form of training, which is presented both on-line and off-line. You can limit yourself to one discipline or assemble from them a whole direction of preparation.

Центр создается для реализации программ профессиональной подготовки и дополнительного профессионального обучения в области геодезии, картографии, землеустройства и развития территорий. Инициатива создания центра принадлежит Московскому государственному университету геодезии и картографии. Есть договоренности о сотрудничестве в создании этого центра с другими университетами из различных стран. К участию готовы Университет Джона Морриса Великобритании (Ливерпуль), Университет прикладных наук (Нойебранденбург, Германия), Университет архитектуры и строительства (София, Болгария). Учебные программы Центра охватывают все виды производственной деятельности в этих областях. Факультет - высококвалифицированные преподаватели ведущих вузов, специалисты с многолетним практическим опытом в области геодезии, картографии, землеустройства и развития территорий. В учебном процессе используются современные информационные технологии, мультимедийное оборудование, электронные пособия, методические материалы, учебно-техническая литература.

Отличительной особенностью центра является возможность выбора индивидуальной тренировочной траектории, возможность выбора преподавателя, а также форма обучения. Для студента есть возможность выбрать необходимые курсы, составив из них индивидуальную программу повышения квалификации. Возможны формы обучения - обучение в течение полного дня, электронное обучение, технология веб-семинаров и так далее. С дистанционной формой обучения, которая представлена как on-line, так и off-line. Можно ограничиться одной дисциплиной или собрать из них целое направление подготовки.

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One of the activities of educational institutions, in any country, is to retrain or improve the quality of specialists. How is such preparation usually done? A department of the university, which operates in a particular area, shall draw up a curriculum for retraining or further training in this or related areas. Selects the list of teachers. They can be teachers of the same unit (in most cases) or third-party specialists. Next, the training form is defined. It can be full day training, correspondence, remote education and others. In addition, the contents that can be used are determined. What are the weaknesses of this approach? It are:

- A fixed composition of teachers with certain qualifications;
- Educational and methodological materials related to each individual teacher and educational institution, information support, available equipment, which are provided to the students;
- Fixed form of training;
- There is no possibility for the listener to adjust their individual learning trajectory, with a form of learning that suits the listener at a certain cost.

Therefore, the idea arose - to make an inter-university, and better international center of advanced training in our fields, joining the efforts of some many universities. We have started implementing such a project on the basis of our university (MIIGAiK). A special web site for such a centre has been established. (Fig. 1).

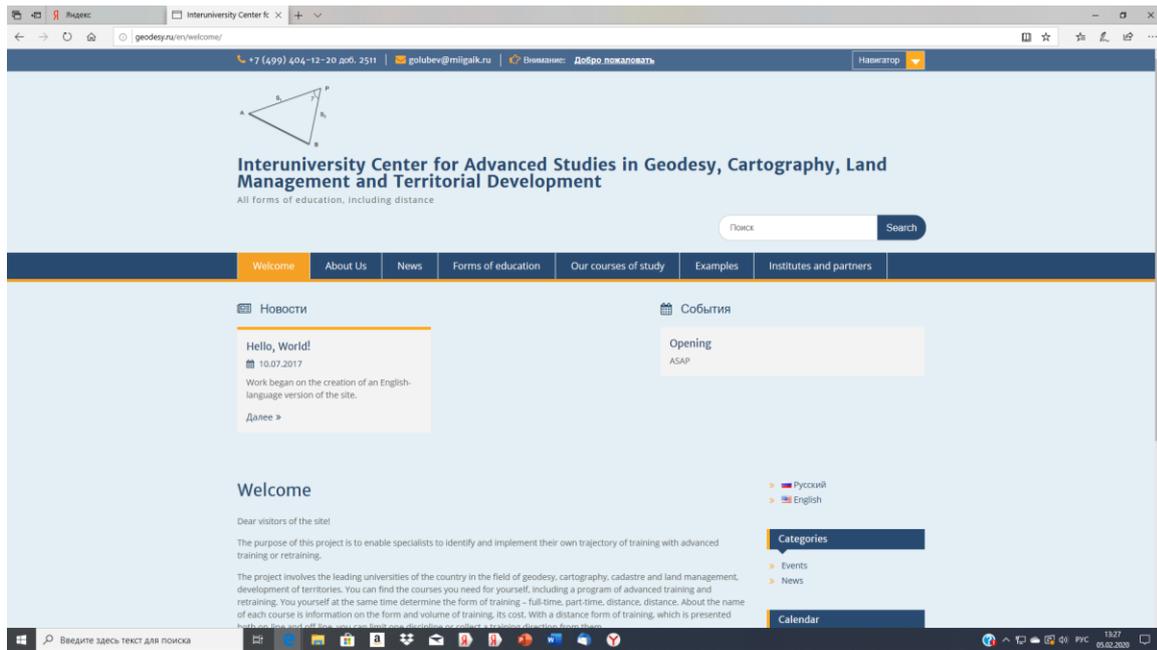


Fig. 1. View the main page of this center on the Internet.

As we can see, the main page presents the purpose of this project - to allow specialists to define and implement their own training trajectory during advanced training or retraining.

The Centre is being established to implement vocational training and additional vocational training programmes in geodesy, cartography, land administration and territorial development. The initiative to create the center belongs to the Moscow State University of Geodesy and Cartography. There are arrangements for cooperation in the establishment of this centre with other universities from various countries. John Morris University of Great Britain (Liverpool), University of Applied Sciences (Neuebrandenburg, Germany), University of Architecture and Construction (Sofia, Bulgaria) are ready to participate. The Centre's training programmes cover all productive activities in these areas. It is expected that the Center will unite the opportunities of leading universities and teachers around the world. As teachers we invite all highly qualified teachers of leading universities, specialists with many years of practical experience in the field of geodesy, cartography, land administration and territory development. All teachers provide brief information about themselves, such as CV. What degree, rank he has, what works he has, his merits, etc.

Example of such information:

Teacher (Author of the course) - Golubev Vladimir - PHD, Professor of the Department of Geodesy MIIGAiK. Author of the textbook - "Theory of mathematical adjustment of geodetic measurements," MIIGAiK, 2016, 403 page. Golubev V.V. has a 80 of scientific and methodological works, the topics of which are related to the following areas: theory of mathematical adjustment of geodetic measurements, geodesy, software, computer technology, Internet technologies in the cadastral, real estate cadastral, university management issues.

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"Honored Worker of Higher School," Honorary Worker of Science and Technology. He is the winner of the Prize of the Government of the Russian Federation (2014) in the field of education and the Prize of F.N. Krasnovsky.

Sections of a subject:

- Concept of adjustment. General theory of parametric method.
- Typical views of parametric equations and corrections.
- Evaluation of accuracy in parametric adjustment method.
- Calculation algorithms in parametric adjustment method, including matrix algorithms, recurrent calculation, group adjustment methods.
- Examples of geodetic network adjustment.
- Individual tasks of geodetic network adjustment.

The scope of the course is 24 hours (including self-study). The form of training is remote. Off-line and on-line technologies are used.

It are provided to pupils:

- Electronic tutorial.
- Presentations of lectures.
- Methodological manuals with examples of adjustment.

Cost of the course: - 4700 rubles.

Beginning of classes: according to the schedule of opening groups.

Training time: on-line (Webinar) 16.30-18.00

Training period: the programs are designed for 2 weeks. Classes 3 times a week.

At the end of the courses: the MIIGAiK certificate of the established model on advanced training is issued.

This information allows the potential user to choose the direction of retraining, teacher, form of training, used information technologies and other.

At present, teachers have prepared materials on at least one content of the following directions. And these works are continuing. Any qualified instructor may be included in this project.

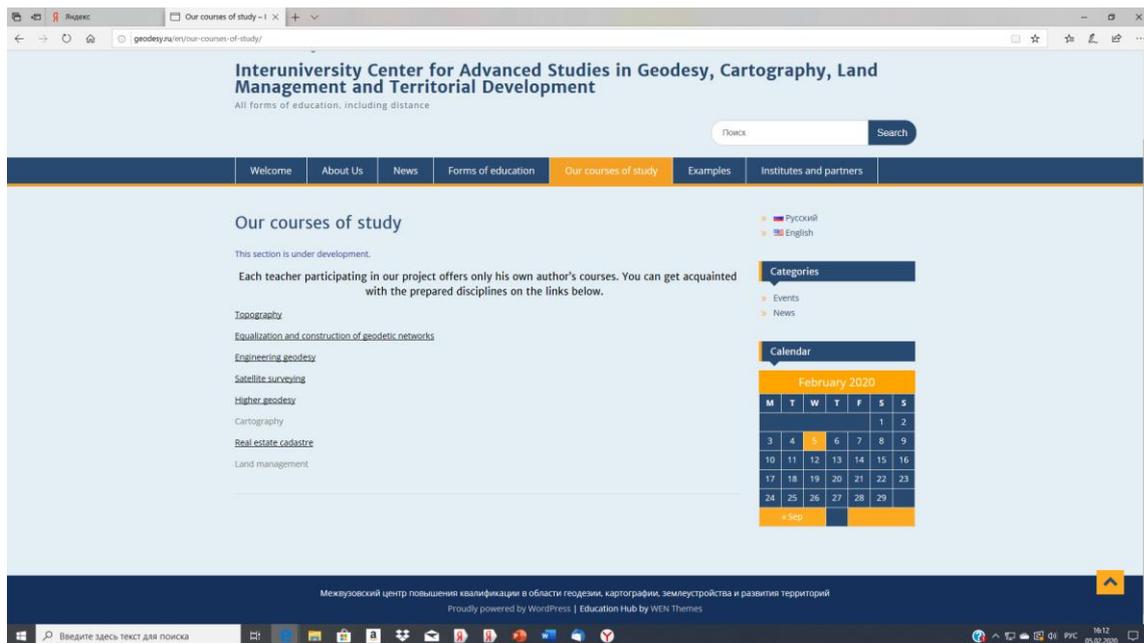


Fig. 2 Our training courses

The educational process uses modern information technologies, multimedia equipment, educational manuals in both electronic and paper versions, methodological materials, educational and technical literature.

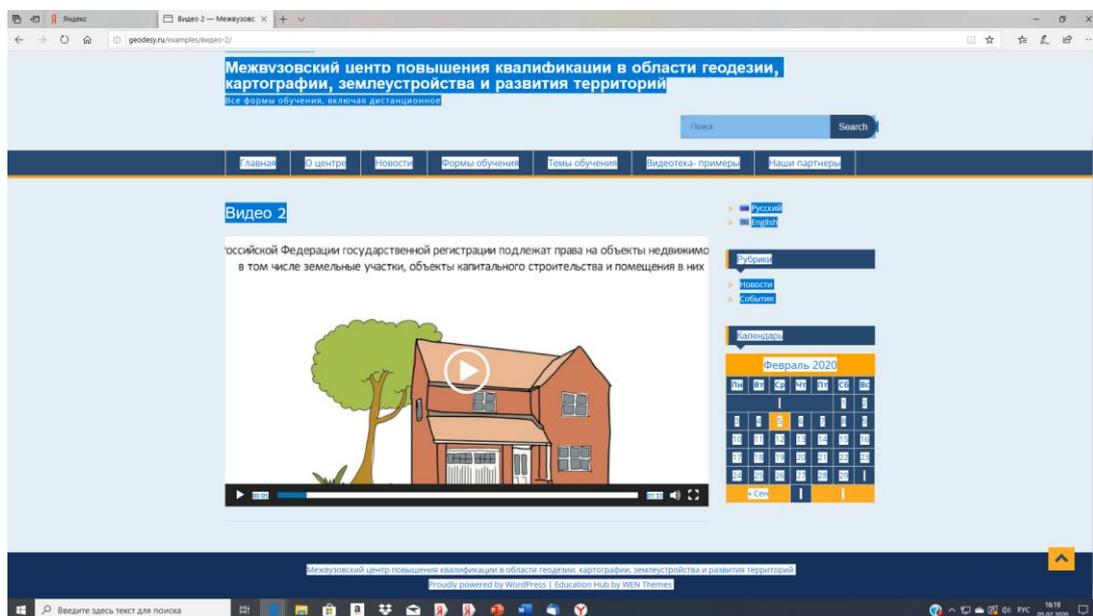


Fig. 3. Video course on real estate cadastral.

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Among the possible content offered to the participants is a training video on geodesy (Fig.4).

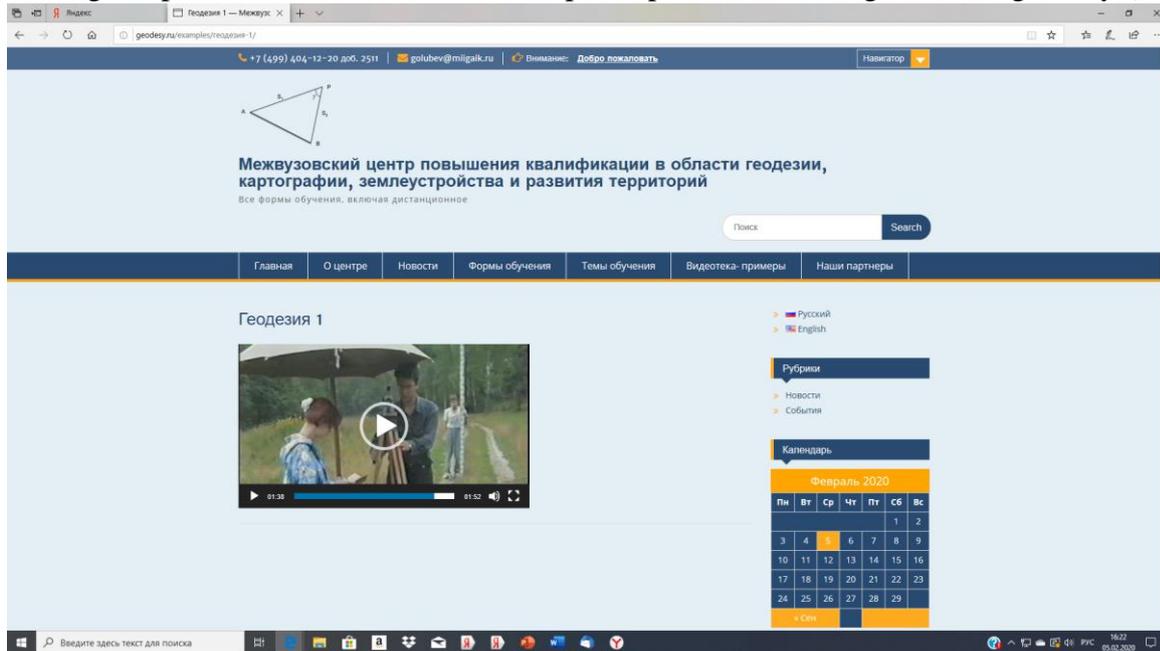


Fig. 4. Training video on geodesy

For the student there is an opportunity to choose the necessary courses, having compiled from them an individual program of advanced training. Forms of training are possible - day training, e-learning, webinar technology, and so on. With a remote form of learning, which is presented both on-line and off-line, you can limit yourself to one discipline or assemble an entire training direction from them. Naturally, there may be regular presentations or presentations recorded as a lecture for off line mode. (Fig. 5.)

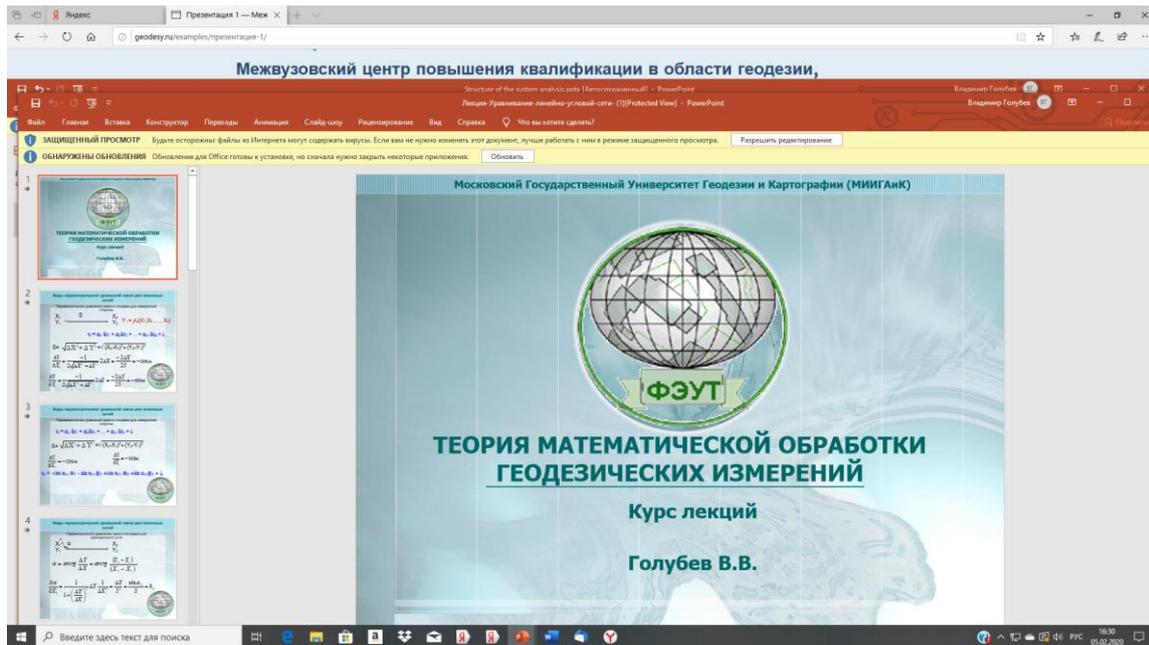


Fig. 5. The regular presentations for a lecture. Example.

An integrated approach and modern methods allow for the most effective training of students with minimal separation from productive activities. The training process itself is organized on the MOODLE platform. It is a course management system (e-learning), also known as a learning management system. It is an acronym for Modular Object-Oriented Dynamic Learning Environment. It is a free (GNU GPL licensed) web application that provides the ability to create sites for online learning. The first version was written on August 20, 2002.

Below is one of the administration pages of the MOODLE system.

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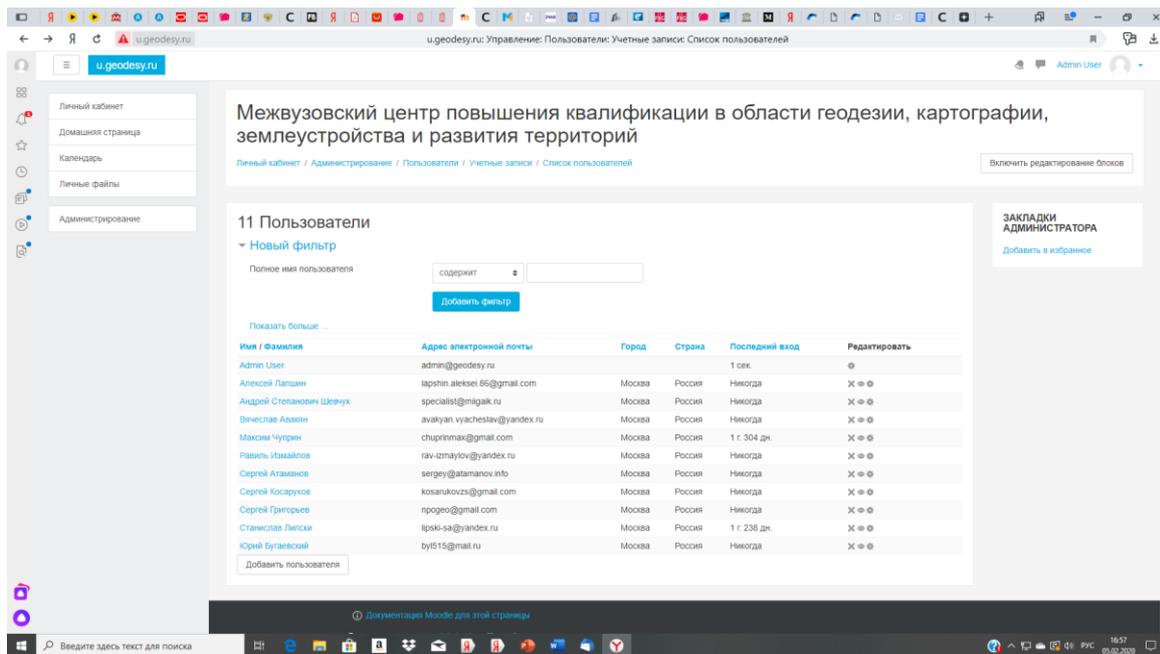


Fig. 6 Administration page of MOODLE system

Here is a list of teachers involved in the system, with electronic addresses and the possibility to revise this list. It can be seen from the picture that each teacher has the opportunity to open his/her personal office, home page, write his/her content there, any files. And only on it depends on what means here will be used, what information resources, tutorials, etc.

The instructor profile template is as follows:

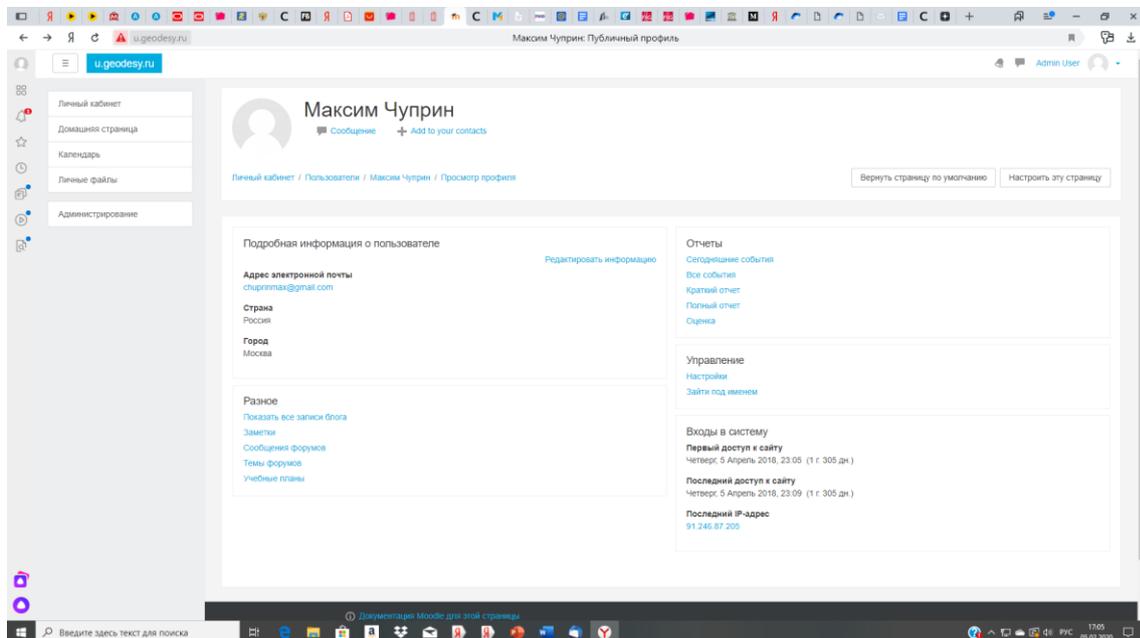


Fig 7. Teacher Profile in MOODLE

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We propose that the Certificate of Completion be issued by the university that presented the course. We think that there are wide opportunities to expand cooperation. It is possible to implement network, modular training. Bilateral and multilateral agreements between universities and centre, between teachers and centre. We offer such cooperation.

The center is formed on <http://www.geodesy.ru> .

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