

SCIENTIFIC RESEARCH PROGRAMME OF THE FACULTY OF GEOGRAPHY IN BELGRADE FOR THE PERIOD 2012-2016

Introduction

As one of the basic tasks of each higher education institution is to design, prepare and conduct scientific research, the Faculty Management proposes this programme of scientific research of the Faculty of Geography for the period of 2012-2016.

The Faculty of Geography in Belgrade is, in addition to educational work, actively involved in developing scientific research as the basic framework of development and modernisation of higher education teaching. Within its scientific research activities, the Faculty performs and develops scientific research independently or in cooperation with other scientific institutions both nationally and internationally, namely fundamental and applied studies in the areas of geography, spatial planning, demography, geospatial and environmental studies and tourism, development of projects, spatial plans, studies and detailed reports. The contents, goals and findings of scientific research and professional activities are in compliance with the tasks and goals of the Faculty, as well as with the accreditation of a higher education institution, with the acquired skills and obtained results included in the educational process.

The scientific research at the Faculty of Geography is characterized by openness and interaction in solving numerous problems, so the academic staff of the Faculty are researchers and associates in various projects and numerous scientific tasks.

As the objective possibilities of scientific research at the Faculty are limited by a poor level of available funds and laboratory equipment, the Programme of Scientific Research focuses on three basic priorities:

- 1. Continuation of scientific research within the existing projects including the contents of research that promote and popularize the work of all scientific research units of the Faculty (institutes and laboratories)*
- 2. Encouragement and preparations for new scientific research projects of international and national importance, significant for inclusion of Serbia in contemporary integration processes in Europe.*
- 3. Activities on improving the conditions for enhancing the scope and quality of scientific research in the following period (work with young scientists, equipping laboratories, professional training of the staff etc.)*

SCIENTIFIC RESEARCH

1. CONTINUATION OF SCIENTIFIC RESEARCH WITHIN THE EXISTING PROJECTS

The proposed programme of scientific research of the Faculty of Geography for the period 2002-2016 is carried out in accordance with the existing research cycle defined by the Call for Projects of basic

research, technological development, integral and interdisciplinary research for the period 2011-2014, which was announced by the Ministry of Science and Technological Development of the Republic of Serbia. Among the existing projects funded by the Ministry, there are two projects of basic research in this cycle implemented at the Faculty which the Faculty is in charge of and there are five more projects in which the researchers from the Faculty are involved and other scientific research organizations are the project leaders. In this cycle, the Faculty of Geography was not a project leader in integral and interdisciplinary research or technological development research projects, but the researchers from the Faculty have been involved in the realisation of three integral and interdisciplinary research projects and two technological development research projects in which other scientific research organizations are the project leaders. As far as bilateral projects are concerned, the Faculty has been in charge of three projects and the researchers from the Faculty have been involved in other three projects in which other scientific research organisations were the project leaders.

Apart from the mentioned ones, there are other projects in progress funded by the Ministry of Natural Resources, Mining and Spatial Planning, Ministry of Energy, Development and Environmental Protection and the Belgrade City Secretariat for Environmental Protection.

Basic research

The programme of basic research at the Faculty is presented by programmes from the study group Geosciences and Astronomy. The following projects approved in the Call for Projects of Basic Research for the period 2011-2014 are led by professors or associates of the Faculty of Geography:

1. Problems and Development Trends of Geospatial System of Republic of Serbia (176017)
2. Development Programmes for Rural Revitalization in Serbia (176008)

Basic research projects that the professors and associates of the Faculty take part in while other scientific research organizations are the leaders, are:

3. Ontogenetic Characterization of Phylogenetic Biodiversity (173038)
4. Petrogenesis and Mineral Resources of the Carpatho-Balkanides and their Importance for Environmental Protection (176019)
5. Cultural Changes and Population Movements in the Early Prehistory of the Central Balkans (177023)
6. From Encouraging Initiative, Cooperation and Creativity in Education to New Roles and Identities in Society (179034)
7. Challenges of the New Social Integration in Serbia: Concepts and actors (179035)

Integrated and interdisciplinary research

Integrated and interdisciplinary research that professors and associates from the Faculty take part in and other scientific research organizations are the leaders:

1. Studying Climate Change and its Effects on the Environment – Monitoring Impacts, Adaptation and Mitigation (43007)
2. Studying Demographic Phenomena as a Support to Public Policies in Serbia (47006)
3. The Role and Implementation of the National Spatial Plan and Regional Development Documents in Renewal of Strategic Research, Thinking and Governance in Serbia (47014)

Technological development

1. Improvement of Lignite Open-pit Technology in Order to Increase Energy Efficiency and Occupational Safety (33039)
2. Stormwater Drainage Systems as Part of Urban and Transportation Infrastructure (37010)

According to the Scientific Research Programme for the period 2016-2016, all the projects of the Faculty of Geography in the area of basic research, as well as all the integrated and interdisciplinary research and technological development projects that professors and associates from the Faculty take part in, are expected to be funded until the end of the planned period, i.e. by December 31, 2014. Such expectations are based on the results achieved until the first evaluation period (December 31, 2012), which was the grounds for decision on further funding. The results achieved during the first evaluation cycle have shown the necessity of raising categories for the researchers from the Faculty of Geography as well as including new young researchers (doctoral students) in the existing projects. The prerequisites would be thereby made for accomplishing one of the goals of the proposed Programme (goal no. 3) – increasing the scope and quality of scientific research in the following period, as the professors and associates of the Faculty of Geography would be additionally motivated and they would participate more actively in the programmes funded by the Ministry.

Projects funded by the Ministry of Natural resources, Mining and Spatial Planning, Ministry of Energy, Development and Environmental Protection of the Republic of Serbia

These ministries need projects that contribute to scientific research in the areas of strategic foundations of spatial planning, land use purpose in the whole territory of the Republic of Serbia and in regional framework (regional spatial plans). According to the provisions of the Spatial Plan of the Republic of Serbia (the Faculty of Geography participated in its preparation and managed various related activities), the implementation of the projected indicators demands a continuation of research activities until 2020. Regional spatial plans for the Danube and Branicevo districts, for the areas of Sumadia, Pomoravlje, Raska and Rasina administrative districts, and other plans of local, municipal importance are in final stages of their preparation, adoption and implementation. Further funding is expected for all the projects in progress.

Scientific projects carried out in cooperation with the Belgrade City Secretariat for Environmental Protection

In the period 2010-2012 the professors and associates of the Faculty of Geography participated in the project *Local Waste Management Plan of the City of Belgrade 2011-2020*. Apart from the mentioned successfully delivered project, another one is in progress – “Recent Situation, Intensity and Consequences of Degradation of the Riverbanks of Kolubara in the Territory of Obrenovac Municipality”. The task of this project is to determine the erosion intensity of the riverbanks of Kolubara basin and an analysis of the consequent degraded changes and their consequences (degraded areas, changing lot sizes, calculating land loss, land use change), and the planned period of its delivery is between August 2012 and October 2014.

The Faculty has taken on numerous responsibilities in the execution of the initiated activities, so the first and foremost goal of this Programme is providing the conditions for continuation of scientific research within the existing projects and research contents they cover which promote and popularize the work of all scientific research units of the Faculty (institutes and laboratories).

2. ENCOURAGEMENT AND PREPARATIONS FOR NEW SCIENTIFIC RESEARCH PROJECTS OF INTERNATIONAL AND NATIONAL IMPORTANCE

When Serbia accessed the Bologna process in 2003, the Faculty of Geography accepted new challenges and set a goal to be part of the Common European Space of higher education, and to establish and develop cooperation with leading geographic institutions in the regions and in Europe. According to the so defined goal, the basic strategy of the Faculty in the area of international cooperation has been signing of the agreement on business and technical cooperation with numerous institutions in Serbia and abroad. As a result of various activities, we can conclude that the international cooperation has intensified during the last decade and that the Faculty of Geography today has signed agreements on cooperation and close cooperation with more than twenty scientific institutions in Serbia and abroad. This was the grounds for further joint involvement in necessary activities of applying for international projects.

In the following period, the Faculty will encourage the work in scientific research projects important for inclusion of Serbia in modern integration and scientific trends in Europe and in the world and develop cooperation with the corresponding scientific institutions in our country and abroad by signing cooperation agreements on delivery of scientific research projects of common interest.

As a result of the mentioned activities, during the period 2011-2012, a project *Interregional Cooperation on Elaboration of Concept for Spatial Planning of the Danube Region – Danube region (DONAUREGIONEN+)* was finished and the project ERASMUS Intensive Programme "Permaculture Design Course – ASPERN Seestadt", initiated in 2012, is still in progress.

As a result of the established cooperation with the scientific institutions in the region and in Europe, the Faculty has applied for obtaining resources from the EU funds for the realisation of IPA project as part of the cross-border cooperation between Serbia and Croatia. Therefore, the activities based on the involvement of the Faculty in the international projects, joint scientific research with the institutions in the region and in Europe, partnership via academic networks, mobility of students and academic staff, involvement of academic staff as visiting professors and lecturers at domestic and foreign universities, are planned in the following period, which is all aimed at strengthening individual and institutional links as grounds of future cooperation.

3. ACTIVITIES ON IMPROVING THE CONDITIONS FOR INCREASING THE SCOPE AND QUALITY OF SCIENTIFIC RESEARCH IN THE FOLLOWING PERIOD

On basis of the tangible indicators, including the scientific competence of a researcher expressed by the number of studies with the impact factor (IF) or the number of quotations, the scope of international scientific cooperation, number of scientific projects financed from EU funds, the quality and the scope of the equipment used in scientific research, the existing conditions for scientific research, the accomplished results of the Faculty of Geography are not satisfactory. This particularly refers to the current state of the equipment used in scientific research (especially in field work), but also to the number of international projects that could provide provision of this equipment. There have been numerous attempts and serious efforts in the last three decades to improve scientific research activities at the Faculty of Geography, and to enhance research results and their application.

Table 1. The scope and quality indicators of scientific research for the period 2008-2012

Projects	2008	2009	2010	2011	2012
Number of professors and associates included in the projects	45	45	45	45	47
Number of published papers in international SCI journal list	3	5	49	43	46
Number of defended doctoral theses	16	7	12	7	14

The number of papers published in international SCI journals amounted to three before 2008, and by the end of 2012 rose to 157 studies in the categories M21, M 22 and M23. The professors and associates from the Faculty of Geography published 22 studies in the SCI list of distinguished foreign and domestic journals in a six-month period, between July 9, 2012 and December 9, 2012. Therefore, taking into account that on April 10, 2009 there were only three professors that had studies published in the SCI list journals (the others had studies in category 24 or other lower categories), and that on May 25, 2013 there were 37 professors and seven associates, positive results of fulfilling this indicator of scientific research are evident. The improvements are obvious, though still insufficient as the relation between

the number of doctors of sciences at the Faculty of Geography and the published studies in the SCI list is still negative (quotient is 0.9), which indicates that a number of professors do not fulfil the conditions for conducting lessons at doctoral studies, or the conditions for mentorships in preparation of doctoral theses. Furthermore, there is a prominent disproportion between the number of the studies published in the SCI list and the number of professors and associates (few professors published a large number of studies, but there are still professors without published studies).

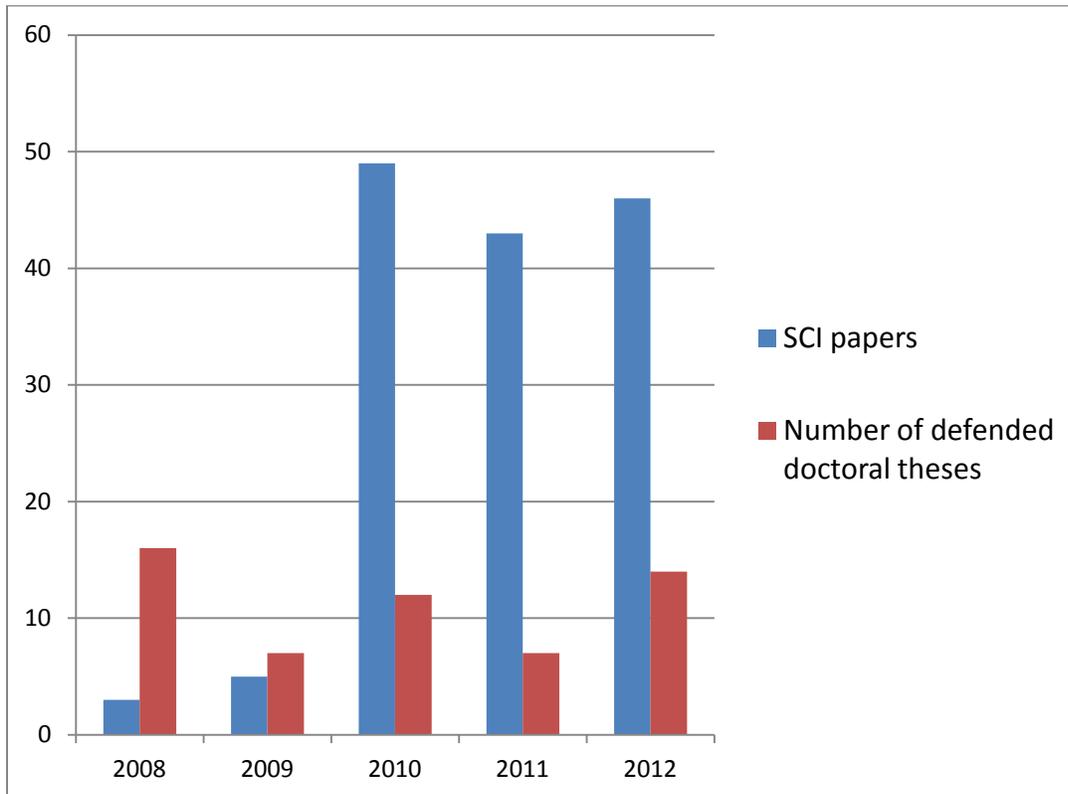


Figure 1. Papers of professors and associates of the Faculty of Geography in the SCI list journals with the impact factor

The Faculty conducts part of scientific research activities through doctoral academic studies. In the academic years 2010/11 and 2011/12 there were 22 students who enrolled on doctoral academic studies, whereas in 2012/13 there were 27 students enrolled. The total number of students in doctoral academic studies in the academic year 2012/13 was 71. Seven doctoral theses were defended according to the old programme in 2009, 12 in 2010, seven in 2011 and 14 in 2012.

The number of doctoral theses defended in 2012 is higher in relation to the previous year as the rules and terms of defending doctoral theses changed so the candidates are adjusting to the new conditions. Most doctoral theses present the results of scientific engagements in basic and interdisciplinary research projects.

We can therefore conclude that scientific research has been improved in the area of basic and interdisciplinary research in the previous years and the number of published studies and number of researchers involved in projects have significantly increased though there are still some unresolved issues.

Due to the mentioned unfavourable situation, the Management of the Faculty of Geography has proposed a plan of activities that would provide a solid improvement in scientific research in the following five-year period. The measures set out in this programme include some activities aimed at faster improvement of the current unfavourable situation, but mostly activities aimed at achieving long-term positive effects that would bring about a considerable improvement of the quality of scientific research, which is the final goal.

The programme envisages the following activities:

- *measures for improvement of the quality and the amount of equipment, as well as of the literature necessary for scientific research*

The quantity and quality of the existing equipment at the Faculty barely provides opportunities for sustaining the current level of scientific research. Due to such alarming situation, this activity was initiated in 2013. Namely, the old Laboratory for Physical Geography was relocated (to 1, Vojvodjanska Street) to renovated premises, where the new laboratory equipment was bought and conditions were created for practical instruction from the corresponding subjects, which promoted the quality of training young scientists. Furthermore, conditions were created for a normal implementation of project activities, preparation of graduate, master theses and doctoral dissertations.

Publishing activity of the Faculty is carried out according to its means. In 2008, the Faculty published three scientific monographs, whereas it published six monographs in 2009, which is a significant improvement of quality. In the period 2008-2012 the Faculty published 17 scientific monographs. Furthermore, researchers from the Faculty published monographs for other publishing houses (13 monographs). The total number of scientific monographs in the analyzed period was 30, which is a significant contribution to the presentation of scientific results in the period preceding accreditation.

Table 12: The library holdings of the Faculty of Geography in numbers

	2008	2009	2010	2011	2012	2013
Number of books	6,507	6,625	6,769	6,928	7,062	7,100
Number of magazines	8,885	8,997	9,030	9,215	9,295	9,332
Total	15,392	15,622	15,799	16,243	16,357	16,432

In the forthcoming period, the Faculty will continue to buy new editions of journals and books, but also to participate in publication of the research results of professors and associates from the Faculty. Moreover, the Faculty is obliged to provide an Internet access to all employees and students of the Faculty of Geography in the building located in Zemun, that has become its property. This would facilitate better searching the resources, as well as the communication between the professors and associates and the students.

- *providing greater financial resources for scientific research*

In the coming period, these incentives have to be clearly marked and defined. The Faculty encourages its employees to engage in scientific research actively and to publish their research results. To this end, the Faculty encourages and assists the employees to get involved in implementation of research projects in Serbia and abroad (to expand cooperation, contents and quality), where funds are provided by the Ministry and the Faculty, but also to participate in international and domestic scientific meetings. Incentive activities refer to compensation of expenses incurred when publishing papers in SCI list, as well as compensation for the participation in one domestic and international event in the current year.

- *increasing the scientific potential of staff and activities related to the internal quality control of scientific research at the Faculty*

Raising the level of scientific competence is one of the most important tasks of the Faculty of Geography in the future. The ultimate goal of this planned activity is also to increase the proposed projects (competent researchers with good references), which will cause and fulfil the previous goal, i.e. better external financing and provision of funds for the purchase of new equipment, field research, etc. Furthermore, the Faculty will support the professors and associates in attending foreign language courses, which will ensure better cooperation with colleagues from abroad, the use of literature and monitoring scientific developments in the world.

In the previous period (2007-2012) the Faculty of Geography established the conditions for self-evaluation and quality control, which implies systematic monitoring and evaluation of scientific research results. On the basis of its long-term objectives the Faculty will constantly work on ensuring conditions and encouraging associates for scientific research by way of implementation of different types of projects, and continuously monitor and evaluate scientific research results.

In December 2012 the Commission for Scientific Research and Quality Monitoring was made at the Faculty, and one of the tasks of the Commission is to establish and adopt procedures and criteria for systematic monitoring and evaluation of the extent and quality of scientific research.

In the coming period, the Management of the Faculty and the Commission will make further efforts to acknowledge the results of scientific research of professors and associates, to present the achieved results transparently and carry out their critical analysis at the end of each year. The critical analysis will cover the quality of published papers, as well as the adequacy of the research areas for which the

financial resources are provided. Pursuant to the long-term activities, the Commission for Quality Monitoring is supposed to do the first internal check in the middle of 2014, i.e. at the half of the period which this programme applies to.

The Commission will carry out a detailed analysis of the scientific competence of researchers at the Faculty of Geography and will make a presentation of the results of this analysis. After the analysis, pursuant to the results, the Commission will propose measures for improving the scientific potential.

- *developing and increasing the scientific youth (development of scientific youth is presented in a special document)*

In order to improve the quality of academic staff, mobility opportunities for professors and associates are continually examined. In the previous period visiting professors from the Faculty of Geography, University of Bamberg (Republic of Germany) and the University of Ljubljana were elected at our faculty. In the following period, the Faculty will try to increase the number of researchers who will be in scientific research institutions abroad, as well as the number of guest speakers through existing channels exchange of professors and associates (CEEPUS, ERASMUS, TEMPUS...).

The Commission will specifically evaluate the extent to which students are introduced to scientific research, as well as the number of doctoral students and their success during the studies. In addition, the evaluation will be made of the development of scientific research youth (inclusion of young researchers in scientific projects).

Successful implementation of the aforementioned activities will result in long-term positive effects, some of which will be measurable at the end of a five-year period (increased scope of participation in international exchange, increased number of papers in SCI journals, better categorization of the researchers according to the criteria of the Ministry of Science ...).

CONCLUSION

The stated priorities imply a set of activities aimed at raising the level and efficiency of scientific research, as well as a better practical use of the results. The final outcome of the proposed program of scientific research should allow a better verification and quantification of the results.

As you can see from the above-mentioned, the basic objectives of the scientific research programme of the Faculty for the period 2012-2016 are a continuation of scientific research activities through existing projects and an attempt to provide their increase in accordance with the actual conditions which may be a limiting factor for further work (the current problems of financing the existing projects), but also taking all the necessary action aimed at essential improvement of the existing conditions for scientific research.

The proposed program is based on the actual situation of material and human resources of the Faculty of Geography and is based on an indicative annual budget for scientific research. The planned activities are designed not to depend on a single source of financing, but the proposed development models are orientated both to external and their own sources of funding.

The results of the planned activities and their implementation are also conditioned by individual activities of individuals (professors and associates) and by their wish and understanding to contribute to the general interest of development of scientific and research activities at the Faculty. Without the achieved consensus on the issue of the planned activities, the implementation of this programme would be difficult.

Prof. Dejan Filipovic
Dean of the Faculty of Geography in Belgrade

Prof. Slavoljub Dragicevic
Vice-Dean for Science and International Cooperation
of the Faculty of Geography in Belgrade