**03# Data on the Department of ecological engineering for soil and water resources protection**

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| **On the Department** |
| **Mission** Through all three levels of study in the implementation of scientific research and the expansion of public information, we strengthen the capacity for teamwork, develop cooperation and realize common interests with environmental, biological and technical systems. We nurture and strengthen the strong relationships we have with water management, agricultural and forestry organizations, organizations dealing with the protection of water and soil resources and natural resources associated with them, the protection of the environment and the community.  **Vision** The Department of ecological engineering for soil and water resources protection tends to become the national center in the field of higher education and research in integrated programs in its field.  **Objectives** The main objective of this study program is to train candidates for the solving of complex problems related to soil and water as a fundamental natural resource determining the overall development of society. The specific objectives of the study program are: 1. Incentive, interdisciplinary education, which combines ecological / biological and classical engineering disciplines; 2. Understanding of the basic principles of engineering and science; 3. Understanding the factors that affect design systems and decision-making, such as resource constraints, system constraints and recognition of engineering problems to be solved; 4. The training of highly qualified experts who will be able to affect application of ecological principles in engineering jobs in the economic sectors (water management, forestry, agriculture), both if they work in organizations that manage natural resources and companies that provide consulting services in the field of ecological engineering or government agencies.  **Strategy** Commitment to young people eager to learn and love of nature and knowledge in the development of a society that ensures the protection of the environment - bond all the people from the Department of Ecological engineering for soil and water resources protection. Ecological engineering for soil and water resources protection is a study program of modern era, whose further development is of great importance for man and the world. This department provides the highest level of knowledge, thanks to top experts, modern programs and experimental field study. By combining ecology and engineering, we monitor, design and build ecosystems. We make peace between nature and society, analyze and solve problems in the field of management of water, soil, flora and vegetation. Therefore, the studies of ecological engineering are extremely important for social and economic development of Serbia in the 21st century. This particularly applies to water and soil resources of hilly-mountainous areas, which constitute the basis for the production of biologically safe food in an unpolluted natural environment. The importance of ecological engineering is reflected in the fact that the protection and conservation of water and soil resources is based on the harmonization of development of agriculture, forestry and water management. The Department of ecological engineering for soil and water resources protection provides the prerequisites for the success of its programs of study through its cooperative and innovative approach. Priority strategic development activities of the Department in the coming period include: further development and refinement of the study program of undergraduate studies; further development of the master’s degree study program; the development of doctoral study programs; the development of research programs, vocational training and other educational programs; the improvement of efficiency and accountability; the promotion and dissemination of results in all of these areas. |
| **Brief history of the department** |
| The Forestry department of the Faculty of Agriculture in Belgrade was founded on 5th December 1920. Until 1949 there was only one subject entitled "Torrent control" in the curriculum of the Department whose lectures dealt with the problems of erosion and torrential flows. According to the curriculum, the subject was in the fourth year of study. During World War II the Faculty of Forestry was closed. After the war teaching began in the academic year 1945/46. The subject "Torrent control" was taught by prof. Sreten Rosić. In 1949 the Faculty of Forestry separated from the Faculty of Agriculture. Until the academic year 1954/55 the Faculty of Forestry remained in the same building with the Faculty of Agriculture in Zemun, when it moved into the building where it is today. From the academic year 1952/53 the issues of torrential flows and erosion control were studied within the subject “Torrent control and protection against erosion" in the fourth year of study. In 1960, 5 departments were formed at the Faculty of Forestry, including the Department of erosion and torrent control. At the Department of erosion and torrent control the subjects were arranged in two chairs: the Chair of erosion and torent control and the Chair of forest ameliorations. In 1961 the Department changed its name to the Department of erosion control and ameliorations. The new reorganization of the Faculty of Forestry was conducted in 1973. The Departments became institutes and all but forestry changed their names. The former Department of erosion control and ameliorations became the Institute for water management of erodible areas. Significant changes in the organization of the Faculty of Forestry took place in 1988. The existing institutes were reorganized into departments and each department represented an educational profile of the Faculty. The Department then obtained the name Department for protection against erosion and its graduates received the title Graduate forestry engineer for protection against erosion. The work of the Department was still organized in two chairs: the Chair of erosion and torrent control and the Chair of ameliorations.  Based on the controversial 1998 Law on Higher Education a new reorganization of the Faculty was conducted. In addition to the existing two chairs another chair was formed at the Department of protection against erosion: the Chair of Geotechnical erosion. The subjects Fundamentals of geotechnics in torrent control, Hydrogeology with geomorphology, Hydrology with hydraulics and Organization of construction and mechanization of control works become subjects of this new chair. Then formed Chair of Geotechnical erosion was now part of the Department, with the change that occurred in 2000, when the subjects of this chair Hydraulics with hydrology, Organization of construction and machinery in erosion control works once again became subjects of the Chair of torrent and erosion control. The subject Materials in erosion control works was transferred from the Chair of torrent and erosion control to the Chair of Geotechnical erosion.  After the adoption of the 2005 Law on Higher Education the Faculty adopted amendments to the Statute and new curricula for all educational profiles based on the principles of the Bologna Declaration. One significant change was the new name of the Department, which remained to date – the Department of Ecological engineering for soil and water resources protection. The name of the Department was derived from the name of the study program of undergraduate studies and master studies. Elective subjects were introduced to all years of study. The study program of undergraduate studies Ecological engineering for soil and water resources protection was first accredited in 2009. The study program of master studies was accreditted at the same time as a joint program, in which the Department had two modules. In the 2013 accreditation, study programs of undergraduate and master studies of Ecological engineering for soil and water resources protection were accredited and the study program of doctoral studies remained the same for all four departments of the Faculty of Forestry.  A total of 739 students have graduated at the Department, of which 652 students in the old program, which was in force until 2006. Since the establishment of the Department a total of 51 students graduated from master of science studies of the old study program and 37 candidates acquired the PhD degree. Since 2006, the total number of graduates at the undergraduate level in the new program in accorrdance with the Bologna process is 87, in master studies 64 and in doctoral studies 7.  Deans of the Faculty of Forestry were the following members of this Department: prof. Sreten Rosić, the first dean of the Faculty of Forestry (1949-1951) prof. Velizar Velašević (1975-1977) prof. Ljubiša Jevtić (1983-1985) prof. Ratko Kadović (2004-2009) prof. Ratko Ristić (2015-) |
| **Teaching staff and associates** |
| Teaching staff:  Dr. Vojislav Đeković, full professor  Dr. Grozdana Gajić, full professor  Dr. Zoran Nikić, full professor  Dr. Ljubomir Letić, full professor  Dr. Miodrag Zlatić, full professor  Dr. Nada Dragović, full professor  Dr. Ratko Ristić, full professor  Dr. Vesna Đukić, associate professor  Dr. Snežana Belanović Simić, associate professor  Dr. Jelena Beloica, assistant professor  Dr. Mirjana Todosijević, assistant professor  Dr. Sara Lukić, assistant professor  Dr. Nenad Marić, teaching assistant  Grad. eng. Aleksandar Anđelković, teaching assistant  Grad. eng. Vesna Nikolić, teaching assistant  Grad. eng. Vukašin Milčanović, teaching assistant  Msc Katarina Lazarević, teaching assistant  Msc Nikola Živanović, teaching assistant  Msc Predrag Miljković, teaching assistant  Msc Siniša Polovina, teaching assistant  Grad. eng. Tijana Vulević, teaching assistant  Msc Ranka Erić, teaching assistant  Non-teaching staff:  Ivan Malušević, professional associate  Natalija Momirović, research associate  Grad. eng. Branislava Mihajlović, laboratory technician  Retired professors:  prof. Stevan Dožić  prof. Stanimir Kostadinov  prof. Ratko Kadović  prof. Vjačeslava Matić  prof. Tiosav Todorović  prof. Milan Veselinović  prof. Miroljub Đorović |
| **Chairs** |
| * The Chair of Torrent and Erosion Control * The Chair of Amelioration * The Chair of Anti-erosion Geotechnics |
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| **Institute of Ecological Engineering for Soil and Water Resources Protection**  The Institute of Ecological Engineering for Soil and Water Resources Protection was established as a scientific research and professional organizational unit of the Faculty of Forestry with a view to the execution of work on the implementation of basic, developmental and applied research. The Institute also carries out other activities: the implementation of scientific and research projects, provision of technical and scientific assistance to enterprises and other legal entities and improvement of scientific methods and techniques. The Institute also organizes courses, seminars and symposiums, as well as students to participate in scientific research. The Institute is composed of teachers, scientific workers and laboratory assistants employed at the Faculty as well as students who can participate in the implementation of scientific and research projects. The Institute is managed by the Manager, appointed by the Dean of the Faculty at the proposal of the Department of Ecological Engineering. The manager of the Institute for Ecological Engineering is Dr. Mirjana Todosijević, assistant professor. |
| **Cooperation**  The Department of Ecological engineering for soil and water resources protection has cooperation with numerous educational and scientific international and national institutions. Cooperation has so far been established with the following educational and scientific international institutions:   * University of Natural Resources and Applied Life Sciences, (BOKU Universitat). Institute of Mountain Risk Engineering, Vienna, Austria (Универзитет за природне ресурсе и примењене животне науке, Институт за инжењеринг о планинским ризицима) ‒ <http://www.boku.ac.at/1902.html>; * Aristotle University of Thessaloniki, Department of Forestry and Natural Environment, Institute of Mountainous Water Management and Control, Thessaliniki, Greece ‒<http://www.auth.gr/forestry>; * Czech University of Agriculture Prague, Faculty of Forestry ‒ [www.czu.cz/en](http://www.czu.cz/en); * Brno University of Technology, Faculty of Civil Engineering, Brno, Czech Republic ‒ ww.vutbr.cz/en/; * Универзите „Св. Кирил и Методиј” во Скопје, Шумарски факултет, Скопје, Македонија, <http://www.sf.ukim.edu.mk/>; * CDE ‒ Center for Development and Environment, Berne University, Switzerland; * ISWC ‒ Institute of Soil and Water Conservation, CAS&MWR, Yangling, Shaanxi, China; * College of International Education, Northwest A&F UniversityYangling, Shaanxi, China; * IRTCES ‒ International Research and Training Center on Erosion and Sedimentation, Beijing, China * Soil Conservation Society of India, New Delhi, India; * Soil and Water Conservation Research and Development Division, Land Development Department, Jatuchak, Bangkok, Thailand; * Climate Change Affecting Land Use in Mekong Delta, Institute Los Banos, Laguna, Manila, Phillippines; * Dipartimento di Scienze Agrarie e Forestali ‒ Università di Palermo, Italy; * Oxford Brookes University, Geography & University Teaching Fellow; * Lleida University, Lleida, Spain; * Centro de Investigaciones sobre Desertificación ‒ CIDE, (CSIC,Universitat de Valencia, Generalitat Valenciana), Spain; * ISRIC ‒ World Soil Information, Wageningen University, Holland; * Ohio State University, Columbus, Ohio, USA; * Kazan State University, Environmental Dept., Kazan, Russia; * Lomonosov University, Geography Dept., Moscow, Russia; * Albert Ludwig University, Faculty of Forestry, Freiburg, Germany.   National institutions that have developed cooperation with the Department:   1. The Ministry of Agriculture and Environmental Protection - Directorate for Waters, Forest Directorate - Financial support for participation in projects, co-financing of international conferences. 2. The Ministry of Education, Science and Technological Development – funding of research projects, co-financing of international conferences, co-financing of participation in international conferences. 3. The Ministry of the Interior, Department for Emergency Situations - joint participation in national projects. 4. University of Belgrade, Faculty of Geography, Faculty of Civil Engineering, Faculty of Agriculture - joint participation in national research projects. 5. Institute for Water Management "Jaroslav Černi", Belgrade - joint participation of researchers in national and international projects; financial support of the Institute to conferences organized by the Department of EE, preparation of master's and doctoral theses at the Faculty. 6. Institute of Forestry, Belgrade - joint participation in national research projects, development of master's and doctoral thesis at the Faculty. 7. City of Belgrade - Secretariat for Environmental Protection – financing of projects. 8. PE "Srbijavode" - financial support for participation in projects. 9. PE "Srbijašume" - financial support for participation in projects, logistic support to researchers in projects. 10. PE "Beogradvode" - logistic support to researchers in projects. 11. WE "Erozija" Niš - support to students’ field work and financial support for conferences organized by the Department. 12. WE"Erozija" Valjevo – support to students’ field trips. 13. WE "Zapadna Morava" Kraljevo - support to students’ field trips. 14. "Mičelini" Valjevo - support to students’ field trips. |
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| **FOR FUTURE STUDENTS**  At the study program of undergraduate studies of Ecological engineering for soil and water resources protection the planned number of students to enroll in the first year of study is 60. The citeria of economic and social justification were taken into account when deciding on the number of students, as well as the criteria of rationality, efficiency and quality of the realization of the teaching process resulting from the Law on Higher Education. Admission to undergraduate study program is based on the ranking of candidates for admission. The ranking is based on the total number of points accomplished by the candidates on the basis of their grade point average in high school (maximum 40 points) and the points obtained in the entrance exam (maximum 60 points). At the entrance examination for the study program Ecological engineering for soil and water resources protection candidates take exams in two subjects:  - Mathematics, with a maximum of 20 points and - Biology, with a maximum of 40 points. The content, timing and manner of taking the entrance exam, as well as the scoring of candidates is determined by a special decision of the Faculty. This decision is in the form of detailed information (student guidebook) is available to any interested party. The list of candidates who met the requirements for admission to the first year of the study program is published on the website and the notice board of the Faculty. A number of students who achieved the best results in the entrance exam belong to the group of students whose education is financed from the republic budget, and the rest are self-financed. The number of students financed from the budget is each year determined in collaboration with the University and the Ministry of Education. To prepare for the entrance exam pupils can purchase manuals of Mathematics and Biology in the Faculty of Forestry bookshop. The Committee for the Admission (ranking) of candidates to the study program is formed at the department level and at the faculty level committees are formed for each subject taken in the entrance exam. |
| **Message of the President of the Department Council**  Dear colleagues, Respectable future students,  Engineers for erosion and torrent control have been educated at the University of Belgrade - Faculty of Forestry for more than 50 years. Based on the above, the program of undergraduate studies in the field of Ecological engineering for soil and water resources protection was launched in 2006. This program of study is unique in Serbia and fully compliant with the contemporary needs of society and complementary to study programs of prestigious European universities. The development of disciplines in the field of ecological engineering is a response to the growing need to provide technical solutions for socio-economic development, and at the same time protect natural resources and the environment. By attending this study program you will learn how to perform: watershed management, protect soil and water from degradation and work on the prevention of natural disasters (i.e. reduce the risk of flooding), produce a project for the protection and reclamation of degraded areas, and much more, with the aim of building sustainable systems in accordance with ecological principles which integrate social needs with the natural environment. The current study program has been improved by being adapted to your needs. Field work is a compulsory part of the study program in almost all subjects and it is particularly represented within the subjects of the third and fourth years of undergraduate studies. The area for which future engineers are educated is a multidisciplinary field so that through field study and elective subjects every student can focus their education according to their personal interests. The very good international cooperation of professors of the Department enables joint field trips of students of this department with students from other European universities abroad. In addition, the international conferences organized by professors of the Department involve a large number of students who present their graduate and master’s theses. In addition to existing student associations this Department in involved in the Forum of students of the World Organization for Soil and Water Conservation. Graduate engineers of the study program Ecological engineering for soil and water resources protection can find employment in the public and private sectors. Use, management and protection of soil and water resources and associated natural resources determine the policy of development of agriculture, water management, forestry, specific industries, trade, environmental protection and the public sector in general. Therefore, the need for professionals for soil and water resources protection is constantly expressed in these areas.                                                                         Prof. Dr. Nada Dragović |
| **A word from the students** |
| When entering university I had a great dilemma between technical faculties and natural sciences, after a short research I found both things in one - Ecological engineering for soil and water resources protection. From the beginnings of existance man is in constant correlation with nature, has always depended on it and has had little respect for it. In the Department of ecological engineering we are very much trying to respect its needs and help it in every possible way. Our goal is not to change nature, but at the same time try to preserve it and adapt it to our needs. Although it seems uncontrollable, nature can be controlled in certain ways - and it is precisely that control that we deal with at this department. Therefore, whoever opts for this department can be assured that with the professional staff and plenty of field courses they can gain knowledge and experience necessary for future work. **Petar Nešković**, II year of undergraduate studies (.jpg)  Studying at the Department of ecological engineering for soil and water resources protection allows us to acquire professional knowledge in the field of soil conservation and regulation of water flows, which are scarce. Consideration of the problem has been combined with the environmental and engineering aspects, which has drawn me to this profession. The students are encouraged to do independent research, with the responsible supervision of a professor. The acquisition of knowledge is based not only on the proposed literature, but also on a variety of experiences of professors and field trainings. The system is very effective, because great success can be achieved with a small number of students. In particular, supervisors have a better insight into the activities, the ability to control and direct the students towards their desired interests. **Filip Vasić,** a master student (Filip Vasić. Jpg)  Everyone of us has a responsibility towards his/her decisions, and one of the most important life decisions is the choice of a faculty. I was instantly drawn to the title of engineer for soil and water resources resources, and when I started with the study program, I knew that this was my future profession. Excellent cooperation between professors and students, field work, where I saw and learned a lot confirmed that I did not go wrong. If you want to be surrounded by nature and at the same time do something for it, our department is the right choice. **Irena Stanišić**, a master student (.jpg)  No matter how much studied, nature remains a mystery. But as long as we strive to understand its laws, respect it and bow to it - we will live. In this department we try to get closer to nature, and make nature closer to us, so that benefit is mutual. In the second year future profession still seems hazy, but the professors with their great knowledge and experience, interesting lectures and field work assure us that we are on the right path towards our future and survival. **Angelina Novaković**, II year of undergraduate studies (.jpg)  Humanity as well as the flora and fauna are dependent on the quality of soil and water. The Department of Ecological engineering for soil and water resources protection enables us to learn how to preserve, save and improve them and improve our lives in harmony with nature. During the studies, numerous field trips, both in the country and abroad have enabled me to gain excellent practical application of the theory, share experience with colleagues from abroad and have good social life. If you want to learn how to live in harmony with nature, save resources for future generations, prevent adverse effects of natural disasters, great experience, generosity, knowledge and expertise of professors from the Department will help you with that. **Natalija Momirović**, PhD student (.jpg)  Since childhood I have been a nature lover and wanted to give my contribution to preserving its beauty. That is why I decided to enroll in this department. Being an engineer of protection of soil and water resources is to be the builder and guardian of nature. The man works and his negative impact is destructive for the environment degrading soil and water resources. Nature needs hundreds of years to recover on its own, and we as engineers in the protection of soil and water resources, with our work and research projects can support its recovery and significantly shorten the time it requires. This department is characterized by work in small groups, and thus excellent cooperation is established with professors and teaching assistants. A very important part of this department is field work. If like me you would like to contribute to nature and help preserve the two most important resources, water and soil with your projects, this is the right department for you. **Dušan Furjanović**, IV year of undergraduate studies (.jpg)  In order to improve the quality of life, throughout history man has been careless in spending natural resources and destroying nature, which has disturbed the balance and led to global changes on Earth as well as destructive processes. Department of Ecological engineering for soil and water resources protection is primarily designed to protect these natural resources from further erosion and awaken environmental awareness of people and the work on nature conservation. Through an interesting program future engineers gain knowledge in many fields such as forestry, water management and design, and in addition to the theoretical way of teaching practical method of teaching is very important, which includes tours of many sites where students can see the situation and projects in nature and interpret the most appropriate solutions that lead to the protection of eroded areas. The department is primarily engaged in the protection of water erosion and fight against natural disasters such as floods. **Ana Bolić**, IV year of undergraduate studies (.jpg)  As a master student of the Faculty of Forestry at the Department of Ecological engineering for soil and water resources protection, I am familiar with many environmental problems in the field of engineering. Through numerous field trainings and expertise of professors, at this department we develop environmental awareness and together we try to prevent many disasters that affect nature, and therefore the man. My task and the task of all of my colleagues is to prevent the emergence of new disasters and protect and restore natural resources, but also to influence people's awareness towards preserving the environment. Future is ahead of us - join us. **Jelena Petrović,** a master student (.jpg) |
| **Enrollment** |
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| **Preparation** |
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| **Career**  Forestry engineer in the field of ecological engineering for soil and water resources protection can be employed in organizations that belong to the areas of water management, forestry, agriculture, etc., organizations that manage natural resources, companies that provide consulting services in the field of ecological engineering and government agencies. Graduate engineers with this level of education can be employed in commercial companies, public companies, water management companies, research centers, schools and colleges, government organizations, ministries and agencies, local authorities and municipalities, etc., as well as other jobs that require this level of education. |
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| **Experience and Advice** |
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| **STUDY PROGRAMS** |
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| **Undergraduate study program** |
| In the process of education in the study program of undergraduate studies **Ecological engineering for soil and water resources protection** candidates will be trained to analyze and solve complex problems relating to natural resources (soil, flora and vegetation, water). The development of disciplines in the field of ecological engineering is a response to the growing need to provide technical solutions for socio-economic development, and at the same time protect natural resources and the environment. Ecological engineering for soil and water resources protection involves the design and construction of sustainable systems in accordance with ecological principles, which integrate social needs with the natural environment. Successful development of ecological engineering requires design methodology based on ecological principles with respect of conventional engineering methods, with highlighted versatility, flexibility and adaptation, in terms of sustainable development.  The study program is designed so that its students follow a logical lead from the basic biological and technical disciplines, across disciplines in which they get to know the components of the ecosystem (forest and agro-ecosystems) and techniques that enable management, to those in which they get final knowledge about the system of protection and improvement of soil resources and water. Undergraduate studies of **Ecological engineering for soil and water resources protection** last for 4 years and a total of 240 ECTS credits are awarded to students. The study program is organized through mandatory and elective subjects, field work and a final thesis. The average number of hours of active instruction per year meets the required criteria (30%), which also applies to the required share of elective subjects (33.3%).  After completing undergraduate studies, the candidates will receive the title – **Graduate engineer of forestry in the field of ecological engineering for soil and water resources protection .**  After completion of undergraduate studies, students are fully qualified to continue into master studies in the field of ecological engineering at the Faculty of Forestry, and under certain conditions, can be included in other study programs at the Faculty of Forestry, or one of the related faculties of biotechnical science. The requirement for admission to undergraduate studies is completed high school with appropriate and successfully passed entrance exam. Curriculum: **pdf**  (link to document: Undergraduate study program EE) |
| **Master’s degree study program** |
| The Faculty of Forestry adopted the 4 + 1 + 3 years structure of the study programs. According to the adopted structure, master studies last for one year or two semesters with a total of 60 ECTS. Master academic studies of ecological engineering for soil and water resources protection are organized through three modules: • Module 1 - Protection of water resources in hilly-mountainous areas; • Module 2 - Degradation and protection of soil resources; • Module 3 – Management of sustainable development in degraded areas.  The modules of master’s degree studies in ecological engineering for soil and water resources protection have five compulsory subjects, one of which is a common subject for all three modules. The Master’s degree program i.e. its modules have a number of elective subjects in which students expand their knowledge in the chosen direction. The teaching process of this study program takes place by means of lectures, exercises, seminar papers, tests, exams, study research work and the master’s thesis. The Master ‘s thesis is developed together with the study and research work in the second semester, with the topic from the field of the selected module and 15 ECTS credits are awarded for it.  The requirement for admission to master’s degree study program of ecological engineering for soil and water resources protection are completed undergraduate studies with 240 ECTS credits earned at the Faculty of Forestry or similar study programs of other faculties, and universities in the country and abroad whose programs are aligned with the programs of this faculty. After graduation the candidates receive the title - ***Master engineer of forestry in the field of engineering for soil and water resources protection.*** Curriculum: **pdf**  (link to the document: Master's Degree EE) |
| **Doctoral study program** |
| Doctoral studies in the field of ecological engineering for soil and water resources protection last for 3 years (6 semesters) and are designed so that students take a total of 5 subjects during the first year, while during the second and third years they perform expert and laboratory research, write and publish scientific papers, participate in national and international conferences and other scientific meetings. The study program is designed in a way that students choose one of three elective groups at the beginning. After preparation and defense of the doctoral dissertation candidates receive the academic title ***Doctor of biotechnical science.*** Curriculum: **pdf** (link to the document: Doctoral Studies EE) |
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| **Experience and Advice** |
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| **FIELD OF ACTIVITY**  ***Field* 73 Research and development**  This field of activity includes:  - applied research: original research in the aim of acquisition of new knowledge, directed towards a certain aim or object  ***branch* 731**  ***group* 7310**  Research and experimental work in science and technology  *subgroup***73102**  Research and experimental development in technical and technological sciences  *subgroup***773103**  Research and experimental development in biotechnical sciences  *subgroup***773105**  Research and experimental development in multidisciplinary sciences  *subgroup* **73109**  Research and experimental development in other sciences  *Activities from subgroups* ***73102, 73103, 73105*** *in* ***73109*** *include:*  - systematic work and creative effort for the four previously defined types of research and development in sciences (mathematics, physics, astronomy, chemistry, biology, medicine, agriculture, geology, etc.) in order to improve knowledge and its application.  ***Field* 03 Water management**  *Branch*  **030** Water management  *Group*  **0301**  *subgroup* **03010** Management of water resources  This field of activity includes:  - follow-up of realization and implementation of water management plans  - issuance of water management compliance and permits  - protection and maintenance of water regimes  - improvement and development of water regimes  - organization and management of case studies in water management  - water balance production  - production of a cadastre of water management facilities and water polluters  -control of use and protection of water from polluters  *Group* **0302**  *subgroup* **03020** Utilization and use of water  This field of activity includes:  - provision and supply of water for different types of utilization and use, except for distribution to households  and other clients for consumption  - maintenance of facilities and plants for the utilization and use of water  *group* **0303**  *subgroup* **03030** Protection from harmful effects of water  This field of activity includes:  - protection from erosion and torrent control,  - drainage of soils (agricultural soil, forest soul, roads, construction land , etc.)  - small-scope regulatory works on water flows;  - maintenance of facilities and plants for the protection against harmful effects of water; production of technical documentation, reconstruction and construction of small facilities and plants for protection against harmful effects of water.  *group* **0304**  *subgroup* **03040** Protection of water from pollution  This field of activity includes:  - implementation of preventive measures for protection of water against pollution  ***Field* 45 Construction**  This field of activity includes: new construction, restoration and ordinary reparations  *branch* **451** Preparatory works  *group* **4511**  *subgroup* **45110** Pulling down and destruction of facilities; earthworks  This field of activity includes:  - cleaning of building sites  - earthworks: excavation, filling, terrain levelling, excavation of canals, removal of rocks, mining, etc.  *group* **4524**  *subgroup* **45240** Construction of hydro-construction facilities  This field of activity includes:  - construction of waterways floodgates, dams and embankments.  - excavation of gutters  ***Field* 74 Other business activities**  *branch* **742**  *group* **7420** Architectural and engineering activities and technical advice  *subgroup* **74202** Design of construction and other facilities  This field of activity includes:  - design of construction and other facilities  *subgroup* **74203** Engineering  This field of activity includes:  - engineering, project management and technical activities: projects of low construction  *subgroup* **74204** Other architectural and engineering activities and technical advice  This field of activity includes:  - advisory and architectural jobs: supervision of construction etc.    ***Field* 91 Activities of organizations on the basis of membership**  *branch* **911**  *group* **9112**  *subgroup* **91120** Activity of professional associations  This field of activity includes:   * organizations whose members unite under a specific level of education or profession, or within a technical area, including associations of specialists engaged in a scientific, academic or cultural activity. |
| LICENSES:  **375 ‒ Chief designer of facilities for torrent and erosion control and reclamation of forest and agricultural land**  *Description of activities:*   * Projects of regulation, planning and rehabilitation of torrential flows; * Projects of thresholds and barriers for torrents; * Engineering hydrology (processing, interpretation, verification and analysis of hydrological and hydrometeorological data and calculations for planning, design, construction and exploitation for the purpose of regulation of torrential flows and protection against erosion on water bodies of the second order); * Projects of biological, biotechnical and technical systems for the anti-erosion regulation of basins; * Projects of natural regulation of flows (biological and bio-technical regulation); * Parts of water management master plans, development plans and basin management plans in the area of ​​planning and protection against torrents and erosion; * Projects of ski slope regulation, restoration and anti-erosion protection by using biological, biotechnical, and technical measures; * Projects for the reforestation and landscaping of various types of forest and agricultural land for the purpose of anti-erosion protection; * Planning documentation for protection from erosion and torrents (making plans for defense against torrential flooding on the water bodies of II order and studies for the proclamation of erodible areas); * Projects of afforestation; * Projects of infiltration trenches - Algerian terraces and gradones, staired terraces and contour trenches; * Design of illo-filter systems for the protection of soil from erosion; * Projects of special grass plants; * Projects of systems for drainage and irrigation on up-to-20-hectare eroded surfaces; * Projects for the re-cultivation of tailings, ash dumps, quarries and communal landfills; * Projects of protective shelterbelts to combat wind erosion in the open space and within urban areas; * Projects of biological protective belts, noise defense and protection of aquatories.   **473 ‒ Responsible contractor on the construction of facilities for protection against torents and erosion** **and reclamation of forest and agricultural land**  *Description of activities:*   * Carrying out of preparatory work: cutting of trees, clearing of shrubs, scrub and removal of topsoil to prepare the facility for the regulation of torrents and protection of soil against erosion; * Works on the regulation, restoration and management of torrential flows; * Construction of thresholds and barriers against torrents and sediment control; * Works on the organization of catchments for protection against erosion which includes biological, biotechnical and technical works; * Implementation of works on the natural regulation of water flows (biological and bio-technical regulation); * Implementation of earthworks on flat and sloping terrains to prepare the land for greening and reforestation; * Construction of the systems for drainage and irrigation of up-to-20-hectare eroded surfaces; * Implementation of biological and biotechnical works for the reclamation of forest and agricultural land (live belts of tree and shrub vegetation and special grass mixtures), the establishment of anti-erosion, field protective, snow protective and wind protective belts by: motorways, highways and local roads, railways, rivers, embankments, canal systems, at the outskirts of urban areas and within urban areas with sloping terrains; * Implementation of works on facilities for the regulation of collapse processes; * Implementation of works on the recultivation of tailings, ash dumps, quarries and communal landfills; * Implementation of works on the anti-erosion regulation of ski slopes. |