



WP2

Development of curricula

Lead Organisations of WP2: **UNS - Serbia**

Participating Organisation: UB; UNI; UBL; UNSA; INSZASUM;
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**Title: Defined goals, competences and learning outcomes of
bachelor and master curricula**

Participating Organisation: UB; UNS; UNI; UBL; UNSA



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Defined goals/objectives, competencies and learning outcomes of Bachelor and master curriculum

Land degradation, especially physical degradation whose most pronounced form is erosion, is a significant problem for conserving resources and has a great negative effect. One of the consequences of soil erosion is the occurrence of torrential floods. The floods that have occurred in the past in the Balkan reiterate the need to improve the education of experts who will be able to prevent the problems that may lead to them.

The main objective of improving and modernizing existing basic and master study programs at universities in Serbia and Bosnia and Herzegovina, as well as developing a new joint master program, is to educate experts who will be able to solve problems in the field of soil erosion and torrential flood prevention and who will have the knowledge and skills with which they will be competitive at regional and international level. Improvement of existing basic and master programs through the modernization of syllabus and introduction of new subjects will be carried out at universities in Serbia (the University of Belgrade – Faculty of Forestry, University of Novi Sad – Faculty of Agriculture and University of Niš – Faculty of Occupational Safety) and universities in Bosnia and Herzegovina (University of Sarajevo – Faculty of Forestry and University of Banja Luka – Faculty of Forestry). The development of new and improvement of the existing study programs are carried out in accordance with the Bologna Declaration and good practices of EU countries (Austria, Italy, Bulgaria) and countries in the region. The aim of the Soil erosion and torrential flood prevention master program is to train students with integrated scientific and professional knowledge and skills to perform competently and professionally in the field. To solve the problems of land degradation and torrential floods, an integrated approach is needed. It includes fundamental analyzes of the impact of all activities on natural resources, land, and water, ensures optimal use and protection of those resources, with adequate management systems.

One of the goals of modernization of existing and development of new study programs is education through training by employed engineers for practical solutions of flood prevention and education of local self-governments for the development of prevention programs. Based on the adopted study programs with new syllabuses, experts will be educated who will have a harmonized approach to solving the problems of controlling erosion processes and protection against torrential floods in the wider area of Balkan.



With the new master study program Soil erosion and torrential flood prevention, students gain the knowledge that will enable them to carry out the tasks of protecting the soil from degradation, primarily soil erosion and taking preventive measures to protect against torrential floods. According to the defined goals, the expected learning outcomes are:

- selection and implementation of solutions, based on knowledge of natural, biological and technical sciences, in the field of soil protection against erosion and prevention of torrential floods;
- acquaintance with methods, facilities and technologies for the regulation of torrential flows and torrential basins and preventive measures against torrential floods;
- design of sustainable systems for the protection of soil from erosion and prevention of torrential floods, based on the principles of ecological engineering, or individual components of the system for basin management, planning and execution of works in the field of torrential flood protection;
- analyzing, planning and solving problems following environmental principles that link society to the natural environment for mutual benefit;
- implementing the decision-making process in the protection of soil and water resources in torrential catchments, as well as making optimal decisions in natural resource management using multicriteria analysis methods;
- applying scientific and professional achievements in solving the problems of human, natural and material safety and to develop a system of emergency management;
- develop strategies for managing the safety system in emergency situations, plans and programs for response to and coordination and management in the case of accidents, strategic and tactical plans for emergency response and rescue and so;
- ability to use scientific and professional knowledge of water and eolian soil erosion processes, torrential flows and torrential floods in order to assess threat and plan emergency and flood protection measures, as well as to plan adaptation to changing climatic conditions;
- application of information technologies in solving problems in the field of protection of soil from erosion and torrential floods;
- effective application of knowledge individually, in a team and multidisciplinary teams, with the ability to learn throughout life.

The master study program Soil erosion and torrential flood prevention empower students to independently perform research, design and construction jobs and tasks in the field of soil protection against erosion and torrential flood prevention. The purpose of this study program is for future master engineers to be effective in teamwork in research or development projects and to demonstrate the ability to manage and make independent and team business decisions in the field of torrential flood protection. By mastering this study program, future



engineers acquire general knowledge and skills as well as subject-specific qualifications that are in the function of quality performance of professional and scientific achievements.

Upon completion of the master study program Soil erosion and torrential flood prevention, as well as upgraded existing master programs, graduates are entitled to continue their education in doctoral studies in forestry or other scientific fields of biotechnical sciences.

The consequences of torrential floods would have been significantly reduced if preventive measures were taken, and they imply an integrated regulation of torrential basins by performing biological, biotechnical and technical works. Based on the adopted study programs with new syllabuses, new experts will be educated, whose approach to erosion control and protection against torrential floods will be harmonized in the wider Balkan region.