SETOF Soil Erosion and TOrrential Flood Prevention: Curriculum Development at the Universities of Western Balkan Countries

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WP2

Development of curricula

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

Participating Organisation: UB;UNI; UBL; UNSA; INSZASUM; BOKU; UNSCM; UNIRC;FRI-BAS

Deliverable 2.6

Title : **Harmonization of the proposed changes**

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

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Harmonization of the proposed changes

The main aim of the project is the development and improvement of curricula for the education of professionals in the Western Balkans (Serbia and Bosnia and Herzegovina) who will solve problems of soil erosion control and protection against torrential floods in compliance with EU directives.

The stated goals of the project will be achieved through the improvement of existing bachelor and master programs and through the development of a new master program established by five partner universities.

Bachelorand master study programs at universities in Serbia and Bosnia and Herzegovina are improved by creating new and modernizing the existing subjects. The changes that are made in the bachelor and master study programs are within the so-called small changes (up to 20% ECTS). According to the Laws on Higher Education of Serbia and BiH, based on the Bologna Declaration, such changes in study programs do not require accreditation.

The outcomes of the improved study programs should enable future engineers to apply methods, equipment and technologies during the design and implementation of works applied in EU countries.

Improvement of existing bachelor and master programs

Every single university from Serbia and Bosnia and Herzegovina was, upon the adoption of the goals/objectives, outcomes and competencies proceed to form new subjects and the modernization of the existing syllabuses by introducing new curricula units.

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- Number of modernized subjects on Bachelor study: UB-3; UNS-4; UNI-1; UBL-4; UNSA-3
  (UB: Soil conservation, Organization of anti-erosion works, Management of soil and water resources in protected areas; UNS: Engineering Hydrology, River engineering, Bioregulation, Soil Conservation Structures; UNI: Soil protection; UBL: Forest ecoclimatology, Forest soils, Forest utilization II, Land degradation; UNSA: Torrent control, Methods of rehabilitation of eroded terrains, Pedology 2)

- Number of modernized subjects on Master study: UB-2; UNS-1; UNI-2; UBL-2; UNSA-5
  (UB:Quality management in the protection of soil and water resources, Valuation of natural resources; UNS: Soil and Water Conservation; UNI: Climate change adaptation; UBL: Syndinamic of Forest phytocaenosis, Forest utilization technologies; UNSA: Degradation and remediation of soil, Soil protection, Sustainable land management in space planning, Melioration of degraded forests, Reforestation of bare karst land)

- New subjects introduced on Bachelor study: UB-5
  (Revitalization of Small Water Flows, Climate change and natural hazardsmanagement, Basics of forest hydrology, Hydraulics of open channel flow, Economics of the soil and water resources protection)

- New subjects introduced on Master study: UB-2; UNS-2; UNI-2; UBL-1; UNSA-1
  (UB: Surface water resources, Stabilization of the terrain; UNS: Decision making in soil erosion and torrent control, Application of GIS in protection against torrential floods; UNI: Soil erosion and torrential floods protection; UBL: Sustainable Land management and global trends)

New master program

The goals, competencies and outcomes of the new master program are in line with the basic recommendations of the Bologna Declaration (.. Higher education and research systems constantly adapt to changing needs, society demands and advances in scientific knowledge ...). The master program have a workload of 60 ECTS since the partner countries' universities have a structure of education 4 + 1 + 3.

The master program includes: 6 subjects (4 compulsory, 2 electives selected from 12 offered), study-research work, professional practice and master work. Compulsory subjects are: Soil and water degradation, Soil erosion protection, Torrential flood protection, Integrative torrential watershed management. Electives subjects are: Land melioration,

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Conservation of karst terrain, Climate change adaptation, Project management for natural resources protection, Sustainable land management, Biomelioration of barren land, Natural disasters risks management, Land degradation and ecosystem services, Torrent monitoring and early warning system, Decision making in soil erosion and torrent control, Modelling of soil and water degradation, Mellioration of degraded forests.

Syllabus for subjects includes areas such as: land degradation, soil erosion protection, torrential watershed management, land melioration, natural disaster risks management, organizational and socioeconomic aspects of protection from torrential floods, etc.

Conclusion

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. On the basis of 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.

The mutual cooperation of HEI's for curriculum improvement will influence the adoption of a uniform methodology in solving the problems of land degradation and the prevention of torrential floods at the regional level. New knowledge implemented in Curriculum represents the new experiences of EU universities and partner countries with their specificities.

The proposed changes in the existing bachelor and master curriculum will comply between the universities. The proposed new master curricula are compiled at the level of universities in each one of the states and at the level of the countries. The application of the adopted good practices of the EU universities complied with the syllabuses of the master program.The syllabi of compulsory and elective courses are structured as joint courses and are defined by harmonization between all universities. This will ensure that graduate students have one unique methodology for solving problems of flood prevention.

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