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Promoting acquisition of competences and standardization of curricula in Rural Engineering teaching through common practical cases in Hydrology: CN-match

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The co-operation between Universities located in different countries, promoting similar topics and teaching methodologies, is paramount in the educational training to meet the objectives of the Bologna Process and developing new skills matching the labor market requirements. With this focus, the work herein presented contributes to both these aims, by implementing, in two Universities courses in Spain and Italy, a joint methodology in Hydrology. Both courses present common matters related with hydrological engineering projects. “Water Resources Management in Agriculture” is the course name at the University of Catania, Italy whereas “Software and tools in Engineering projects” is the subject tough for the students of Forest Engineering in the Agronomist and Forest Engineering School of the University of Cordoba.

This work presents an experience whose main objective is to involve the students into the technical knowledge and skill acquisition by a competition, following the philosophy of football leagues which are quite appreciated in both countries. Basically, we have prepared a practical case of hydrological design which two-student groups have to solve. The best teams of each country have to play the international final match, which will take place by videoconference. The awards for the winners in each country are merits for their curricula such as the participation in the EGU Assembly 2014 and a certificate of winners.

The practical case is based on the Curve Number method developed by the Soil Conservation Service (1972) in order to compute abstractions from storm rainfall and calculate design hydrographs (CN-SCS method). The CN-SCS method is one of the most used methods for implementing hydrological studies of a catchment aimed for example at assessing management practices and hydro-geological risk plans as well as water resources protection measures. In general hydro-geological risk assessment and modeling studies are necessary for a reliable urban planning in order to manage and reduce the ¬flooding and land-sliding risk. Flood and landslide maps qualitatively and quantitatively identify urban and natural features affecting the sustainable social, economic and industrial development. These studies imply the use of last generation tools and datasets for the land surveying characterization also through remote sensed topographic data (DTM, DSM, LIDAR, ASTER and Laser Scanner), hydrologic/hydraulic modeling (commercial and experimental rainfall/runoff numerical models, algorithms for 1D and 2D hydrodynamic routing) and GIS mapping.

In both the university courses in Italy and Spain, after completing the hydrological studies, the students were trained into a procedure based on the CN –SCS method; in the period October 2013 – January 2014. To evaluate the usefulness of the teaching experience, a pull about the degree of interest and the ability and skills acquired was given to the students before and later the course.

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Thus experience has been quite motivating for students and teachers. For instance, an Ethiopian student frequenting the Italian course was one of the two selected students for the Italian university course; this could help in diffusing the methodology also in countries that are still not included in the Bologna Process. The evaluation of the practical case implementation as well as the results of the final test showed that, due to the introduction of this methodology in these Spanish and Italian courses, the level of knowledge about hydrological engineering projects as well as the interest and the capability by students of facing an hydrological study for controlling floods or managing resources increased significantly.

REFERENCES:

USDA Soil Conservation Service, 1972. National Engineering Handbook, Section 4, Hydrology. US Government Printing Office, Washington, DC, 544.