General Information	
Academic subject	Hydraulic-forest watershed management
Degree course	Management and conservation of the agro-forest environment
Curriculum	Biosystem Engineering
ECTS credits	6
Compulsory attendance	No
Language	Italian

Subject teacher	Name Surname	Mail address	SSD
	Francesco Gentile	francesco.gentile@uniba.it	AGR/08

ECTS credits details			
Basic teaching activities	Lessons 4 CFU	Practice 2 CFU	

Class schedule	
Period	First semester
Year	Third
Type of class	Lecture- workshops

Time management	
Hours	150
In-class study hours	60
Out-of-class study hours	90

Academic calendar	
Class begins	October 2, 2017
Class ends	January 26, 2018

Syllabus	
Prerequisites/requirements	Maths; Phisics
Expected learning outcomes (according to Dublin Descriptors) (it is recommended that they are congruent with the learning outcomes contained in A4a, A4b, A4c tables of the SUA-CdS)	*Knowledge and understanding* Know the principles and methods to protect the territory from the hydrogeological disasters, with particular reference to hilly and mountainous areas. Know the hydrological, hydraulic and erosive processes at the origin of the phenomena of disruption, also in order to have a relative quantification. *Applying knowledge and understanding* Know how to properly dimension the main torrent control works. Protect the territory from the hydrogeological risk with engineering solutions, even sustainable. Capacity to design the main types of intervention to be used to effectively defend the territory, focusing on the use of soil stabilization and flow regulation works, including check dams. *Making informed judgements and choices* Ability to acquire, understand and process information on the agricultural-forestry environment, assessing their implications on safety from hydrogeological disaster, with particular attention to eco-compatible and sustainable resource management. *Communicating knowledge and understanding*

	Ability to communicate effectively, orally and in writing, with people of equal or different skills, using, also with the help of modern communication systems, Italian and a European Union language other than their own, generally English. *Capacities to continue learning* Continuous updating of knowledge in the field, including tools that make use of new communication and information technology.
Contents	History of watershed management. Catchment and its morphological properties. Regulations. Soil erosion processes and modelling. Sediment transport in a river. Type of torrential watersheds. Torrent control. Check dams and sediment storage dams. Torrent bed works and slope treatment measures. Type of check dams. Design of gravity check dams. Watershed management using low environmental impact works. Soil bioengineering techniques. Field excursion.
Course program	
Bibliography	Notes of the lectures distributed during the course. Garcia M. (editor) – Sedimentation engineering: Processes, Measurements, Modeling and Practice. ASCE Manuals and Reports on Engineering Practice No 110. Brooks K.N. et al. – Hydrology and the Management of Watersheds – Blackwell publishing.
Notes	
Teaching methods	Lectures will be presented through PC assisted tools (Powerpoint, Adobe Acrobat, etc.) and slide projector.
Assessment methods (indicate at least the type written, oral, other)	The exam consists of an oral test on the topics developed during the hours of theory and practice in the classroom and in the field, as reported in the Academic Regulations for the Bachelor's (article 9) and in the study plan (Annex A) . For students enrolled in the course year in which the teaching is done there will be a mid-term exam. The mid-term exam is to be oral or in a written multiple choice test. The outcome of this exam contributes to the final evaluation and is valid for one academic year. The evaluation of the student's preparation is based on pre-established criteria, as detailed in Annex A of the Degree Regulations. For students who took the mid-term exam, the final evaluation is expressed taking into account the result of the mid-term exam.
Evaluation criteria	*Knowledge and understanding* Type and classification of the works, the objectives to be achieved by their use, the design criteria and sizing, the regulatory framework will be acquired. *Applying knowledge and understanding* Design and planning of interventions. *Making informed judgements and choices* Capacity to evaluate operational strategies to obtain security from hydrogeological disasters, with particular attention to eco-compatible and sustainable resource management. *Communicating knowledge and understanding* Ability to communicate effectively the acquired skills. *Capacities to continue learning* Continuous updating of knowledge in the subject, also with reference to acquired knowledge applications.
Further information	