UNIVERSITÀ DELLA CALABRIA
DIPARTIMENTO DI **INGEGNERIA DELL'AMBIENTE**

PLANNING ACTIONS FOR WATER SAFETY

2020/21

Teaching Unit	PLANNING ACTIONS FOR WATER SAFETY	
Code of the Teaching Unit	27006856	
Degreecourse (CdS)	ENVIRONMENTAL AND TERRITORIAL SAFETY ENGINEERING	
Course level	FIRST	
Course unit code	0790	
ScientificDisciplinary Sector (SSD)	ICAR 02- COSTRUZIONI IDRAULICHE E MARITTIME E IDROLOGIA	
Number of ECTS credits (CFU)	6	
Type of Teaching Unit (TAF)	Other	
Teaching Unit Qualification	Compulsory	
Yearcourse	2	
Period in which the Teaching Unit is Provided	First Semester	
Teacher	Prof. Ernesto Infusino	
Other teachers involved		
Didactic organization *	Hours of Lectures	36
	Hours of Practicals	12
	Hours of Laboratory	
	Hours Individual study	102
Language	ITALIAN	
Requiredprerequisites	None	
Prerequisities	Sanitary and environmental engineering	
Content	Engineering techniques for solving particular environmental problems	
Learning outcomes	Natural water treatment techniques are particularly technically interesting because, generally, they are characterized by low environmental impacts, if compared to technologically advanced solutions, and by low investment and management costs. Therefore, the advantage of such techniques is to be more easily included in sensitive environmental contexts or as integration of advanced technological solutions as well as being more widely accepted by the Authorities and the population. The aim of the Course is to provide the state of the art of the best sustainable techniques for water detection and treatment. At the end of the course students will be able to plan wastewater treatment interventions with natural techniques.	
Program	Disturbances of the main bio-geochemical cycles due to the human activities (localized and diffuse sources) Preliminary investigations, indirect and direct, on the environmental matrices. Techniques for detecting contaminants. Reference legislation. Techniques and Instruments for Sampling, Processing, Transport, Retention and Sample Analysis Effects of wastewater spills in watercourses, lakes and sea. Analysis of the natural processes of self-purification in water, lichen and soils. Biodegradation, dilution, jump depth, etc. Design of innovative techniques for the wastewater treatment: the oxidation ponds, the phytodepuration of water. Bio-chemical aspects of wastewater phyto-purification and recycle Filtration and UV light disinfection Recycle of wastewater also by disposal on land and agricultural and/or	

	industrial use Procedures for check and inspection of the installations Description of case studies and authorization aspects Exercises and design of application cases
Delivery Mode	FRONTAL
TeachingMethods	Theoretical part with traditional blackboard. Images, films and technical drawings for the description of the works with a projector. Conducting exercises with classroom calculations and assignment of the individual project.
Methods and Criteria for Learning Assessment	The exam consists of presenting the individual project documents and oral discussion the theoretical aspects. The project must be drawn up in the following tables: process report, general, plans and sections of the individual units. The drafting of the project is preparatory for access to the oral exam. The oral exam will focus on three/four questions whose answer may also be in writing. The results of the project and the oral test have the same weight and contribute equally to the overall mark
Textbooks and FurtherReferences	Course booklet Luigi Masotti “Depurazione delle acque” Calderini Editore Metcalf & Eddy “Wastewater Engineering” McGraw Hill Piero Sirini “Ingegneria sanitaria-ambientale” McGraw-Hill Ezio Ranieri “La realizzazione degli impianti di depurazione” BIOS Articles “Corso Tecniche per la Difesa dall’inquinamento” BIOS
Peer review	Professors SSD ICAR/02 e ICAR/03
Orario delle lezioni	http://diam.unical.it
Calendario degli esami	http://diam.unical.it
Commissione d’esame	http://diam.unical.it

STIMA DEL CARICO DI LAVORO PER LO STUDENTE				
	Lezioni [Ore]	Esercitazioni [Ore]	Laboratorio [Ore]	Studio individuale [Ore]
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Design of innovative techniques for the wastewater treatment: the oxidation ponds, the phytodepuration of wastewater Bio-chemical aspects of wastewater phyto-purification and recycle Filtration and UV light disinfection Recycle of wastewater also by disposal on land and agricultural and/or industrial use Procedures for check and inspection of the installations Description of case studies and authorization aspects Exercises and design of application cases	18	6		51
Tesine/altri homework				
Ulteriori ore da dedicare alla preparazione dell'esame *(es. ore che gli studenti dedicano allo svolgimento di precedenti tracce d'esame)*				
TOTALE *(Attenzione: i totali devono coincidere con le ore inserire dall'ufficio)*	**36**	**12**		**102**
ORE COMPLESSIVE	**150**			