

Table with 2021/2022 Course Catalogue (include 1st year and 2nd year courses with ECTS credits)

1st year				
Course	Area	Short description	ECTS	Semester
Design of Structures in Seismic Areas	Structural Engineering	The course provides the basic tools for the design and safety verification of structures in seismic areas with reference to the Eurocodes. The main skills that will be acquired include the ability to design/verify, in terms of ductility, strength and stiffness, an anti-seismic reinforced concrete structure.	9	1
Electrical Systems for Sustainable Development	Electrical Power Systems	Electrical Systems course aims to give at the students the basic knowledge of electrical engineering and addresses the issues associated with electric machine and electric systems for energy.	6	1
Climate Change Scenarios	Hydraulic and Marine Constructions and Hydrology	The course deals with the main natural and anthropogenic aspects, direct and indirect, related to climate change for different scales of interest. The aim of the course is to provide the necessary tools to understand and model the interconnections between climate, hydrological extremes, energy balance and carbon cycle and determine their global effects.	6	1
Subsurface Flow and Contaminants Transport	Hydraulics	The course is dedicated to the study of groundwater flow and transport of contaminants in real porous media. The aim of the course is to deliver the tools for the groundwater flow and solute transport simulation in order to know the fate of the contaminants and how to remediate polluted sites.	6	1
Hydraulic Constructions for Sustainable Development	Hydraulic and Marine Constructions and Hydrology	The course deals with the studies on the protection of water resources, the design of the classic hydraulic engineering structures, the mechanisms that control the water flow in the earthly phase of the hydrological cycle, with important opportunities for the application in the protection of the land from flooding.	9	2

Energy from Renewable Sources	Building Physics and Building Energy Systems	The course provides the necessary knowledge to design systems that use renewable energy sources by considering technical, economic, and environmental aspects. For each energy source, the course deals with the design of the main plant components, the criteria for evaluating the energy produced, and the methodologies for assessing their environmental impact.	9	2
Operating Tools for Hydraulic and Environmental Studies	Hydraulic and Marine Contructions and Hydrology	The course deals with the numerical models able to model and solve hydraulic and environmental problems. The course addresses univariate and multivariate modeling of problems formulated both in a deterministic and in a stochastic approach.	9	2
English for Engineering		B2 level	3	2

2 nd year				
Course	Area	Short description	ECTS	Semester
Territorial Planning and Urban Renewal	Urban and Regional Planning	The course aims to provide students with the cultural foundations and critical tools to be able to read the territorial context in its complexity. The course provides students with a critical knowledge capacity useful for a project of the territory that is capable of mitigate the environmental issues.	6	1
Renewable Sources and Energy Enhancement Processes	Chemical Technologies	The focus of the lectures is on the sector of energy production from renewable sources. The class is divided into two parts. The first one deals with issues relating to traditional and renewable primary energy sources together with the analysis of climate change and greenhouse gas emissions. In the second part, processes of energy production from renewable sources are analyzed.	9	1
Membrane Processes for Environment Sustainability	Chemical Foundations of Technologies	This course provides the basics knowledge and understanding of the chemical fundamentals of membrane technology. The aim of the course is to to acquire specific skills and expertise on the most common applications of membrane science and technology: desalination, wastewater treatment, gas separation, bioreactors in pharmaceutical applications, and fuel cells.	6	1
Sustainable Water Management	Hydraulic and Marine Constructions and Hydrology	The course addresses the issue of water resource management in the context of the principles and models of sustainability and optimization. It deals with the study of the Integrated Water System both from a hydraulic, technical, construction and technological point of view, and from an economic and management point of view.	6	2
Sustainable materials for environment and constructions	Materials science and technology	The course aims to provide the student with an overview of today's potential in the field of sustainable materials for the environment and buildings. To this aim, the characteristics of the main classes of materials will be summarized	6	2

		with reference to the nanostructure. Aspects relating to the sustainable use of resources will be explored.		
Elective Courses			12	1-2
Final Examination			18	

Elective Courses				
Course	Area	Short description	ECTS	Semester
Acoustic and Electromagnetic Pollution	Building Physics and Building Energy Systems	The teaching aims to make students learn the theoretical concepts and the basic physical quantities of Acoustics to acquire the knowledge necessary for the execution of the measurements of the acoustic quantities and of the characteristics of the sources.	6	1-2
Human and Ecological Risk Assessment	Ecology	This module is designed to provide the student with an understanding of the theory and practice of ecological risk assessment (ERA) as a risk management tool and as a working basis for setting priorities for conservation and resource management in a broader context.	6	1-2
Planning Actions for Water Safety	Hydraulic and Marine Constructions and Hydrology	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.	6	1-2
Goals and actions for sustainable development		The course aims to provide the basis for understanding the problems related to sustainability, in all its forms, analyzing the environmental, economic, financial, social, legal, institutional, communication and planning aspects and exploring the transdisciplinary aspects, necessary for a well-founded understanding of the complexity of the topic.	6	1-2