

SEASONAL SCHOOL

WAT-CHANGE - Water-related ecosystem services and nature-based solutions for adapting societies to climate change

A one-week crash-course on nature-based solutions at Scuola Superiore Sant'Anna – Pisa (Italy)

DEADLINE FOR APPLICATION: 29th September 2025

While **climate change** is posing at risk traditional **water resources management**, there is the urgent need to devise **low-energy** and **low-impact solutions** to adapt the environment, societies and economies to this threat.

The **WAT-CHANGE Seasonal School** aims at introducing the participants to the new growing area of **nature-based solutions** providing **water-related ecosystem services** following a **cross-disciplinary approach**.

In particular, we will deal with nature-based solutions for water supply, wastewater and polluted water treatment, flood risk mitigation measures, managed aquifer recharge, river restoration, constructed wetlands, and sustainable drainage systems.

The course is based on **20 hours of interactive and cross-disciplinary learning** from academia and the professional world along with **hours dedicated to field work and lab work** (chemical analyses).

Two site visits will put in touch the students with real blue-infrastructure. In particular, we will visit:

- **the Massaciuccoli wetland and the phytotreatment area for treating the nutrient-rich rural drainage;**
- **the ecohydrological infrastructures of the Val di Cornia area.** This area has recently been recognized by UNESCO's Intergovernmental Hydrological Program as a site of global importance for ecohydrology.

During the field visits we will learn how to monitor and to sample surface water and groundwater.

A 4-hour workshop (***Nature-based solutions and Managed Aquifer Recharge. Application, case studies and market perspectives***) will allow showcasing technical solutions, along with the market and the regulatory perspective and the state of the application of nature-based solutions in the real world.

At the end of the course the students will have the knowledge and skills to understand impact and functions of the main nature-based solutions for solving the most common water resources management problems and to start their design.

WHAT IS A SEASONAL SCHOOL AT SCUOLA SUPERIORE SANT'ANNA

The Seasonal Schools are short, intensive, excellence training programmes, strongly interdisciplinary, and focused on the Scuola Superiore Sant'Anna frontier research topics. They are open to University students enrolled in Bachelor Degree, Masters' Degree and PhD courses, with same grade characteristics as the School's students. The Seasonal Schools are also opportunities for meetings and exchanges with other high-students from all Italy as well as from abroad, to get experience of Scuola Superiore Sant'Anna facilities and laboratories.

Course scheduled for November 3rd -7th , 2025

All lectures will be held at Palazzo Pilo Boyl, Via S. Cecilia 24 - Scuola Superiore Sant'Anna, Pisa (Italy)

Apply to: <https://www.santannapisa.it/it/seasonalschool/wat-change-water-ecosystem-climate-change>

For further information please write to: rudy.rossetto@santannapisa.it (course coordinator).

SEASONAL SCHOOL

WAT-CHANGE - Water-related ecosystem services and nature-based solutions for adapting societies to climate change Preliminary programme

Preliminary programme

Date	Time	Lecturer	Institution/company	Lecture/Activity
November 3 rd	9:00 – 11:00	Pietro Tonutti/Rudy Rossetto	Scuola Superiore Sant'Anna	Welcome by the Head of the Institute of Crop Science / Course introduction Nature-based solutions and water-related ecosystem services to adapt to climate change
November 3 rd	10:00 – 12:00	Luca Sebastiani	Scuola Superiore Sant'Anna	Phytotreatment of inorganic and organic xenobiotics
November 3 rd	12:00 – 13:00	Rudy Rossetto	Scuola Superiore Sant'Anna	Vulnerabilities of traditional water resources management. Group work
November 3 rd	13:00 – 14:30			Lunch pause
November 3 rd	14:30 – 16:30	Anacleto Rizzo	Iridra srl	Sustainable drainage systems: nature-based solutions for urban runoff management
November 3 rd	16:30 – 18:30	Anacleto Rizzo	Iridra srl	Sustainable drainage systems: laboratory of Water Sensitive Urban Design
November 4 th	9:00 – 13:00	Rudy Rossetto	Scuola Superiore Sant'Anna	Field trip to the Massaciuccoli Lake Basin (visit to the phytotreatment schemes for rural drainage water and the wetland, sampling and monitoring of surface water)
November 4 th	13:00 – 14:30			Lunch pause and transfer to the Institute of Crop Science
November 4 th	14:30 – 16:30	Alessandra Francini	Scuola Superiore Sant'Anna	Lab activity: Determination of nutrients by Photometer analyses in surface water
November 4 th	16:30 – 18:30	Alessandra Francini	Scuola Superiore Sant'Anna	Lab activity: Determination of heavy metals by Microwave Plasma-Atomic Emission Spectroscopy analyses in surface water
November 5 th	9:00 – 11:00	Rudy Rossetto	Scuola Superiore Sant'Anna	Design and operation of managed aquifer recharge schemes
November 5 th	11:00 – 13:00	Andrea Mandarino	Università degli Studi di Genova	River restoration: principles, techniques and case studies
November 5 th	13:00 – 14:15			Lunch pause
November 5 th	14:15 – 18:30	Workshop		Nature-based solutions and Managed Aquifer Recharge. Application, case studies and market perspectives.
November 5 th	18:30 - 20:00			WAT-CHANGE Seasonal School Social Aperitif
November 6 th	8:15 – 19:15	Rudy Rossetto	Scuola Superiore Sant'Anna	Field trip to Val di Cornia (visit to Managed Aquifer Recharge scheme, River Restoration works, Tertiary treatment schemes for water reuse, sampling and monitoring of groundwater)
November 7 th	9:00 – 11:00	Andrea Saba	Scuola Superiore Sant'Anna	Ecosystem Services, Water and Climate Change: Navigating the 2023-2027 EU Common Agricultural Policy
November 7 th	11:00 – 13:00	Riccardo Bresciani	Iridra srl	Treatment wetlands as nature-based solutions for water pollution control: typologies and sizing methods
November 7 th	13:30 – 14:15			Lunch pause
November 7 th	14:15 – 16:15	Alberto Pirni	Scuola Superiore Sant'Anna	Water ethics: principle and open challenges
November 7 th	15:15 – 16:15	Rudy Rossetto	Scuola Superiore Sant'Anna	Nature-based solutions within the water-energy-food-ecosystem NEXUS
November 7 th	16:15 – 17:15	Rudy Rossetto	Scuola Superiore Sant'Anna	Final assessment
November 7 th	17:15 – 18:15	Rudy Rossetto	Scuola Superiore Sant'Anna	Final discussion