SEASONAL SCHOOL

WAT-CHANGE - Water-related ecosystem services for adapting societies to climate change

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

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**.

In particular, we will deal with nature-based solutions for water supply, treatment of polluted water, and flood risk mitigation such as managed aquifer recharge, river restoration, constructed wetlands, sustainable drainage systems, and remediation of contaminated sites using phytoremediation techniques.

At the end of the course the students will have acquired the knowledge and skills that will allow them 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.

The course is based on **20 hours of interactive and cross-disciplinary learning** from academia and professional world along with **8 hours of laboratory exercises** or with the aid of PCs and free and open source software. **A field trip will take place to visit the ecohydrological infrastructures of the Val di Cornia area**. This area has recently been recognized by UNESCO's International Hydrology Program as a site of global importance for ecohydrology.

A final 4-hour workshop will bring participants in contact with Italian companies involved in the design and management of nature-based solutions and with regulatory bodies, in order to deepen the knowledge of the regulatory framework.

WHO SHOULD ATTEND

Undergraduate, postgraduate and PhD students with scientific and engineering backgrounds (e.g. earth and environmental sciences and engineering, civil engineering, natural sciences, agricultural engineering, biological sciences) interested in understanding the agri-food systems governance. Participation of students from social or economics background is also welcome.

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-performing students from all Italy as well as from abroad, to get experience of Scuola Superiore Sant'Anna facilities and laboratories.

Deadline for registration: September 19th, 2023

Couse scheduled for October 16th-20th, 2023

Course location: Scuola Superiore Sant'Anna, Pisa (Italy)

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

Sant'Anna
School of Advanced Studies – Pisa

CROP SCIENCE
RESEARCH CENTER
Sant'Anna

Seasonal School WAT-CHANGE 2023 - PROVISIONAL PROGRAMME

Date	Time	Lecturer	Lecture/Activity
October 16th	10:00 – 11:00	Rudy Rossetto	**Course introduction**
October 16th	11:00 – 13:00	Rudy Rossetto	**Nature-based solutions and water-related ecosystem services to adapt to climate change**
October 16th	13:00 – 14:30		**Lunch pause**
October 16th	14:30 – 16:30	Alessandra Francini	**Lab activity: Microwave mineralization**
October 16th	16:30 – 18:30	Alessandra Francini	**Lab activity: MP-AES determination of metals**
October 17th	9:00 – 11:00	Laura Ercoli	**The soil resource**
October 17th	11:00 – 13:00	Rudy Rossetto	**Design and operation of managed aquifer recharge schemes**
October 17th	13:00 – 14:30		**Lunch pause**
October 17th	14:30 – 16:30	Alessandra Francini	**Lab activity: Organic molecules extraction from plant tissues for UPLC/MS-MS analysis**
October 17th	16:30 – 18:30	Luca Sebastiani	**Lab activity: UPLC_MS_MS determination of Organic molecules**
October 18th	9:00 – 11:00	Fabio Masi	**Treatment wetlands as nature-based solutions for water pollution control: typologies and sizing methods**
October 18th	11:00 – 13:00	TBA	**Greening and Sustainability in the business environment**
October 18th	13:00 – 14:15		**Lunch pause**
October 18th	14:15 – 19:15	Workshop	**Nature-based solutions in the real environment. Application, case studies and market perspectives.**
October 18th	20.15	TBA	**WAT-CHANGE Seasonal School Social Dinner**
October 19th	9:00 – 19:00	Rudy Rossetto	**Field trip to Val di Cornia (visit to Managed Aquifer Recharge scheme, River Restoration works, tertiary treatment schemes for water reuse, land reclamation works)**
October 20th	9:00 – 11:00	TBA	**Giving space to rivers. River restoration techniques and case studies.**
October 20th	11:00 – 13:00	Anacleto Rizzo	**Sustainable drainage systems: nature-based solutions for urban runoff management**
October 20th	13:30 – 14:15		**Lunch pause**
October 20th	14:15 – 16:15	Marco Falconi	**Phytoremediation and biological techniques for remediation of contaminated sites**
October 20th	16:15 – 17:15	Rudy Rossetto	**Final assesment**
October 20th	17:15 – 18:15	Rudy Rossetto	**Final discussion**

NEXUS-NESS

PRIMA
PARTNERSHIP FOR RESEARCH AND INNOVATION IN THE MEDITERRANEAN AREA

Val di Cornia
Osservatorio UNESCO per l'Ecoidrologia
GLOBAL ECOHYDROLOGY NETWORK
unesco
ecohydrology programme

Interreg
MARITTIMO-IT FR-MARITIME
Fonds européen de développement régional
Fondo Europeo di Sviluppo Regionale

ReS EAU