



Co-funded by the
Erasmus+ Programme
of the European Union



SHORT INTENSIVE COURSES¹

- *ON-LINE* -

Course title: URBAN FORESTS AND AIR QUALITY

Linked to the Internship programme: *Plant traits and atmospheric pollution in urban environment*

Edition: 2021

Academic coordinator: Prof. Paolo De Angelis - University of Tuscia - Viterbo, Italy

Total class hours: 10

Period of the course: September 2021

ENTRY REQUIREMENTS:

- ✓ to be currently enrolled in one the TAURUS partner Universities (<https://www.taurus-erasmus.eu/consortium/consortium/>)
- ✓ to have a university level knowledge on ecology, biology, chemistry
- ✓ additional knowledge and experience on the issues of pollution and reclamation will be particularly appreciated

GENERAL OBJECTIVES

Provide an updated overview about the role of the urban forests on air quality.

Provide the basic knowledge on plant traits which are relevant for the removal of atmospheric particulate matter and practical experience on indexes calculation.

Provide the basic knowledge on modelling tools suitable for the evaluation of environmental services provided by trees in urban areas

Provide the basic element of sustainability criteria applied to the remediation activities

COURSE CONTENTS

Air quality of urban areas. Leaf traits and PM removal. Modelling environmental services of Trees in urban areas. Plant VOC emission and secondary pollutants formation in urban atmosphere.

EXPECTED LEARNING OUTCOMES

A better understanding of the role of urban forest on air quality, and on the importance of species selection criteria.

¹ Students of the TARUS Consortium may follow “on-line” specialistic courses on topics / methodologies related to the internship programmes organised by TAURUS Universities. An active participation is mandatory for the students selected for the Internship (trainee). The courses are free of charge and open to the registered students up to the maximum reported in the programme. A final certificate of participation will be provided by the organising University.



A better understanding on tools and methodologies to analyse the plant functions on air quality, from forest to urban scale.

ACADEMIC COORDINATOR

A portrait of Prof. Paolo DE ANGELIS, a man with short dark hair and glasses, wearing a light blue shirt and a grey jacket.	<p>Prof. Paolo DE ANGELIS, PhD, is Full Professor at the University of Tuscia - Italy. The main scientific area is on <i>Plant & Tree Ecophysiology</i>, with emphasis on the study of the impacts of climate changes (temperature, drought, elevated atmospheric CO₂ concentration) and pollutants on trees, forests and shrubland. In the sector of <i>Environmental Phytotechnologies</i>, he coordinates designs, tests and pilot solutions for the application of phytoremediation to specific polluted sites and for different matrix: soil, water, sediment. In the sector of rural and urban forestry, he contributes to reforestation projects mainly focused on environmental targets. Publications: https://orcid.org/0000-0001-8310-8831</p>
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LECTURERS

A portrait of Dr. Gabriele GUIDOLOTTI, a man with a shaved head and a goatee, wearing a white polo shirt.	<p>Dr. Gabriele GUIDOLOTTI, PhD, is researcher at Institute on Terrestrial Ecosystems (IRET), National Research Council (CNR). At the University of Tuscia he completed the study in Forestry and obtained his PhD degree in Forest Ecology. His research interests are in the field of plant ecology and ecophysiology mainly applied to the study of the impact of abiotic stressors on carbon pools and fluxes, volatile organic compounds (BVOCs) and other air pollutants in the soil-plant-atmosphere continuum in natural and anthropized ecosystems. He actively participated to several national and European research projects, mainly focused on the impact of environmental stresses and climatic changes on different plant and ecosystem processes. Publications: https://orcid.org/0000-0002-2052-6523</p>
A portrait of Dr. Dario LIBERATI, a man wearing a grey cap and a dark jacket, looking slightly to the side.	<p>Dr. Dario LIBERATI, PhD, is Research Assistant at the University of Tuscia – Italy. He’s a biologist with a PhD in forest ecology. His main research field is the plant ecophysiology. His research activity is connected to the plant response to the environmental factors, such as temperature, water, nutrient, biotic agents, pollutants. He is involved in research projects concerning phytoremediation, urban reforestation, ecosystem response to climate change and invasive insect species. Publications: https://orcid.org/0000-0001-6433-3371</p>
A portrait of Dr. Rocco PACE, a man with short dark hair and a mustache, wearing a dark jacket and smiling.	<p>Dr. Rocco PACE, PhD, Dr. Rocco Pace, PhD, is Research Fellow at the Research Institute on Terrestrial Ecosystems (IRET), National Research Council (CNR) – Italy. He has a university education in forestry and environmental sciences with a PhD at the Technical University of Munich - Germany. His research interests are in urban forestry and modeling to evaluate ecosystem services of trees in urban areas. He is currently working on evaluating and improving the parameterization of physiological traits to estimate pollution removal and microclimatic effect of trees in cities. The objective is to provide valuable decision support tools for effective and sustainable planning of urban green spaces. Publications: https://orcid.org/0000-0002-3126-635X</p>



TEACHING ORGANISATION

The lectures and class activities will be provided by ZOOM web platform. Participant regularly registered to the course, will join the lectures “live” to participate actively the Class activities. The lectures will be also available recorded under request.

Online Class Calendar

ID	Topic	Lecturer	1 st lecture (1 hr)	2 nd lecture (1 hr)
Intro	Air quality of urban areas	Gabriele Guidolotti	06/09/2021 at 08:00 AM (CEST)	-
Mod-1	Leaf traits and PM removal	Dario Liberati	07/09/2021 at 08:00 AM (CEST)	08/09/2021 at 08:00 AM (CEST)
Mod-2	Modelling environmental services of urban trees	Rocco Pace	09/09/2021 at 08:00 AM (CEST)	14/09/2021 at 08:00 AM (CEST)
Mod-3	Plant VOC emission and secondary pollutants formation in urban atmosphere	Gabriele Guidolotti	10/09/2021 at 08:00 AM (CEST)	15/09/2021 at 08:00 AM (CEST)

ASSESSMENT & CERTIFICATION

To assess the level of skills acquired at the end of the course, the student will write a short report on the key features of an urban area chosen by him, referring to the different modules of the course.

Students who have participate to class activities (>75% live) and which obtained positive evaluations of their reports will receive a certificate of participation.

MAXIMUM NUMBER OF PARTICIPANTS: 20

REGISTRATION

For the registration send by email your contact info (name, email, home University, course you are enrolled in, short CV) to the following address: pda@unitus.it (Cc darioliberati@unitus.it) writing as subject “TAURUS SIC 2021”

OTHER NOTES

The links for the Lectures and for the Class activities, will be provided by the organiser to the registered students.

SUGGESTED LITERATURE

An update list (when possible, also digital copies) of the most relevant books and papers will be provided to the students.