

# SCIENCE POLICY SUSTAINABILITY



A short course  
addressing air quality and climate change

Università degli Studi di Napoli  
Federico II



Contact us: [didatticadottorato.dicmapi@unina.it](mailto:didatticadottorato.dicmapi@unina.it)

## What you will gain

I  
explore the intricate  
relationship between  
science, policy, and  
sustainability

II  
gain understanding of  
air quality and climate  
change and related  
policies

III  
be equipped to  
engage effectively in  
sustainable decision-  
making processes

## PhD in Industrial Products and Processes Engineering (DICMaPI)

Course Schedule:  
16-18 September 2024

Aula Malquori del  
DICMaPI  
Piazzale V. Tecchio, 80

18 hours/3CFU with  
final examination



### Module I

Pollutants and  
processes



### Module II

Science and Policy  
Making

### Your teachers



Andrea D'Anna



Elisabetta Vignati



Roberta Colicchio and  
Chiara Pagliuca



### Module III

Air Pollution and  
Human Health

Register at: [didatticadottorato.dicmapi@unina.it](mailto:didatticadottorato.dicmapi@unina.it)



## Module I

- Pollutants by anthropogenic activities: mechanism of formation, strategies for reduction (Monday, September 16<sup>th</sup>, 2:30 – 6:30 pm)
- Particulate matter in the atmosphere: size distributions and chemical composition (Tuesday, September 17<sup>th</sup>, 9:30 – 11:30 am)
- Atmosphere chemistry and physics: the photochemical smog, stratospheric ozone and the ozone hole, the radiative balance in the atmosphere (Tuesday, September 17<sup>th</sup>, 11:30 am – 1:30 pm)



## Module II

- Understanding air quality and climate change science (Tuesday, September 17<sup>th</sup>, 2:30 – 3:30 pm)
- Policy frameworks and science for air quality (Tuesday, September 17<sup>th</sup>, 3:30 – 4:30 pm)
- Policy responses to climate change (Wednesday, September 18<sup>th</sup>, 9:30 – 10:30 am)
- Future visions: mastering foresight and effective communication (Wednesday, September 18<sup>th</sup>, 10:30 – 11:30 am)
- Developing an advocacy plan for promoting science-based policies (Wednesday, September 18<sup>th</sup>, 11:30 – 12:30 am)



## Module III

- The most important air pollutants leading to disease and the duration of exposure to air pollution needed to harm health (Wednesday, September 18<sup>th</sup>, 2:00 – 4:00 pm)
- Health risks associated with ambient air pollution: comparison between indoor and outdoor pollution (Wednesday, September 18<sup>th</sup>, 4:00 – 6:00 pm)
- Final examination (Wednesday, September 18<sup>th</sup>, 6:00 – 7:00 pm)

## Module I

**Andrea D'Anna** is a professor of Chemical Engineering at DICMaPI. His research activity is mainly focused on the study of processes of interest in the energy and the environmental sector; in recent years he has focused on the study of the properties and performance of flame-synthesized carbon nanoparticles for sensor applications and of mesoporous films of metal oxide nanoparticles for biomedical applications. The activity is also aimed at designing and monitoring low environmental impact combustion plants and reactors. He is an active member of the international aerosol and combustion communities. He is a fellow of the Combustion Institute and has received the Silver Medal of the Combustion Institute twice for the Best Papers at the 34th (2014) and 37th (2020) International Symposium on Combustion; he serves as a reviewer for the most important international journals in the fields of combustion and environment.

## Module II

**Elisabetta Vignati** is a physicist by training graduated at University of Milan, with a PhD in Geophysics obtained at Copenhagen University. Through more than 30 years of her carrier in atmospheric science she worked in developing and applying atmospheric models with the purpose of evaluating the impact of human activities on air quality and climate and in the interactions between science and policy. She is (co-)author of more than 60 articles published in peer-reviewed journals. After working as researcher at the Danish National Environmental Research Institute, she joined the European Commission Joint Research Centre (JRC) in 1999 where she remained until 2024. In 2012 she became the Head of Clean Air and Climate Unit. Her unit aimed to provide integrated analysis in support of EU air quality and climate policies. She was Deputy Director of the Directorate for Energy, Mobility and Climate of the JRC.

## Module III

**Roberta Colicchio** is an associate professor in Microbiology and Clinical Microbiology at the Department of Molecular Medicine and Medical Biotechnology. In 2010, she received the Novartis Award for her studies on meningococcal pathogenesis in in vivo murine model. She also focused her attention on the evaluation of the antimicrobial activity of both natural substances and synthetic peptides against infections sustained by multidrug-resistant bacteria. She is among patent holders for a new promising synthetic molecule with antimicrobial activity against multidrug-resistant bacteria.

**Chiara Pagliuca** is a researcher of Microbiology and Clinical Microbiology at the Department of Molecular Medicine and Medical Biotechnology. Her research interests include the study of molecular mechanisms responsible for a wide range of infectious diseases (e.g. meningococcal meningitis, gastrointestinal infections and nosocomial infections). Moreover, her studies are focused also on the characterization of the intestinal microbiota and microbiome associate with the celiac disease, and on the correlation between the infectious status and male infertility. She is the Unit Responsible for the PRIN project (PRIN 2022) focused on the development of innovative approaches to counteract the persistent infections caused by *Helicobacter pylori*.