



**Optimizing  
Renewable Energy**



**Designing Smart  
Cities**



**Air Pollution Control  
and Policy**

# **Atmospheric Chemistry and Physics**



**Cleaner Industrial  
Processes**



**Safer Indoor Air  
Quality**



**Climate Change  
Mitigation**

Prof. Dr. Sascha Nehr

4 semester hours

Tuesday | 09:00-11:45 | 05.3.022

Start: 30.09.2025

60 h contact time | 90 h self-study

5 CP

15-minute oral presentation plus  
written homework assignment

## Why to choose the elective „Atmospheric Chemistry and Physics“?

- Atmospheric Chemistry and Physics is the key to understanding and solving societal challenges in areas such as energy, environment and technology.
- The seminar-style course is practice-oriented and addresses selected topics in a critical discourse. These topics include:
  - ✓ Application of physico-chemical models to describe atmospheric states and processes in real-world scenarios
  - ✓ Evaluation of air pollution measures
  - ✓ Development of clean air plans
  - ✓ ...

## Contents

- The atmospheric system
- Photochemistry of important atmospheric species
- Kinetics and atmospheric chemistry
- Global tropospheric chemistry and climate change
- Indoor air pollution
- Air pollution control strategies

## Real-world applications of „Atmospheric Chemistry and Physics“!

- Urban planners use atmospheric data to design cooler, less polluted cities.
- Governments and industries model pollution to create clean air plans.
- Engineers redesign combustion systems to reduce harmful emissions.
- Building designers use air quality models to enhance indoor ventilation.
- Climate scientists run simulations to guide policy decisions.
- NASA and ESA monitor global pollutants via satellite data.

## Learning outcomes

- **Basic knowledge for the assessment of process-related emissions**
- **Basis for designing sustainable products and production chains**
- **Key skills for technical, ecological and economic decision-making**
- **English technical language and communication for the global job market**
- **Working with international literature and research results**
- **Preparation for Bachelor's Thesis**