



Blended Intensive Programme

Alanya Alaaddin Keykubat University, Antalya/Alanya, Türkiye

Organise a course for students

ENGINEERING A CLIMATE-RESILIENT, WATER-SMART AND POLLUTION-FREE AVIATION FUTURE WITH ARTIFICIAL INTELLIGENCE

VIRTUAL PART
OPEN SCHEDULE COURSE
11st-15th May 2026

FACE TO FACE 3 ECTS
18th-22nd May 2026

Venue: Alanya Alaaddin Keykubat University, Antalya/Alanya, Türkiye

2024-1-TR01-KA131-HED-000195913

Abstract

Engineering a Climate-Resilient, Water-Smart and Pollution-Free Aviation Future with Artificial Intelligence is an interdisciplinary Erasmus+ Blended Intensive Programme designed to address the urgent sustainability transformation required in the aviation sector under the Net-Zero 2050 agenda and the European Green Deal framework. The programme responds to the structural challenges posed by climate change, water scarcity, environmental pollution, and digital transformation by integrating engineering, artificial intelligence, environmental sciences, governance, and infrastructure planning. It moves beyond conventional aviation education by embedding climate science, AI-driven emission modelling, water resilience strategies, and environmental risk governance into a unified academic platform.

Through a blended learning structure combining virtual theoretical foundations with applied physical workshops, participants engage in carbon accounting simulations, AI optimisation labs, pollution mapping exercises, and interdisciplinary project development. The course fosters systems thinking and equips students with the analytical, technical, and policy-oriented competences required to design climate-resilient and environmentally responsible aviation systems. By operationalising Sustainable Development Goals (SDGs 4, 5, 6, 7, 9, 11, 12, 13, and 15) into measurable engineering and governance applications, the programme transforms sustainability from a conceptual discourse into a practical and innovation-driven educational mode.

Key topics include:

- **1. Climate Science and Governance**

- Climate science for decision-makers
- Global climate governance and international agreements
- Aviation environmental responsibility frameworks

- **2. Artificial Intelligence and Digital Transformation**

- AI in emission modelling
- Machine learning for operational optimisation
- Predictive analytics and optimisation models
- Digital twin technologies for sustainability monitoring

- **3. Environmental Management and Pollution Control**

- Carbon footprint analysis and lifecycle assessment
- Environmental Management Systems
- Noise and air pollution mapping methodologies
- Environmental risk assessment models

- **4. Water Sustainability and Circular Systems**

- Airport water footprint assessment
- Smart water management systems
- Greywater recycling and circular resource management

- **5. Clean Energy and Future Technologies**

- Sustainable Aviation Fuels (SAF)
- Hydrogen and electric propulsion systems
- Energy-efficient infrastructure design

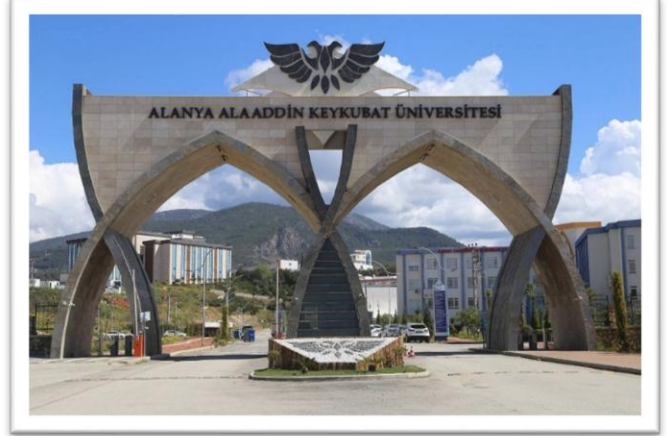
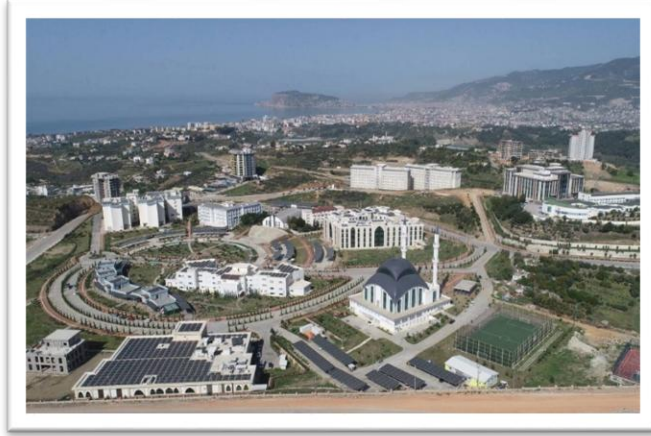
- **6. Sustainable Infrastructure and Policy Integration**

- Climate-resilient infrastructure planning
- SDG-integrated modelling approaches Water-saving strategies at both individual and societal levels
- The role of green infrastructure in water management, such as rainwater harvesting and green roofs

Methods for the course:

The course adopts a blended, interdisciplinary and practice-oriented teaching methodology that integrates theoretical knowledge with applied problem-solving. The virtual component provides the conceptual foundation through interactive lectures, guided discussions, climate data interpretation exercises, and AI-based emission modelling demonstrations delivered via digital learning platforms. During this phase, students engage in collaborative online workshops, policy analysis sessions, and structured mentoring to define sustainability challenges and develop preliminary project concepts.

The physical mobility phase emphasises experiential learning through carbon accounting simulations, artificial intelligence optimisation laboratories, environmental mapping exercises (including noise and air quality assessment), and water management case studies. Participants work in multinational, interdisciplinary teams using data-driven tools and modelling software to design climate-resilient and environmentally responsible infrastructure solutions. The pedagogical core of the programme is project-based learning, supported by peer collaboration, academic supervision, and international jury feedback. This methodology ensures the development of analytical thinking, digital competences, sustainability governance awareness, and applied systems design skills within a real-world, solution-oriented framework.



Turkish Lecturers:

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Assoc. Prof. Dr. Meltem AKÇA
Asst. Prof. Dr. Gürkan ORTAMEVZI
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Foreigner Lecturers:

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