Climademy

CLIMADEMY international courses.

1. Climademy summer course

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1. Climademy summer course

Dates

1-3 July 2024

Location

Marathon, Greece

Venue

Golden Coast Hotel & Bungalows

www.goldencoast.gr

Hosting Organisation

Ellinogermaniki Agogi, OID: E10212356

Link of the Course

esia.ea.gr/climademy-summer-school/

Ellinogermaniki Agogi

Ellinogermaniki Agogi (EA) is one of the most innovative schools in Europe and it has rich research and development activity in the fields of Inquiry Based Science Education (IBSE), Project Based Learning (PBL), and STEM education in combination with digital, online based learning environments and tools that use virtual and augmented reality. The Research and Development Department of EA is guiding the introduction of innovation in the school setting and acts as an interface between the pedagogical research, the technological innovation, and the school community. EA is a Certified Teachers Training Centre and a founding member of the European School Innovation Academy (ESIA - https://esia.ea.gr/). Since 2008, it has systematically and consistently delivered more than 100 teacher training courses, in which more than 3000 teachers and school principals have participated.

Description of the course

The main aim of the Summer School is to provide participating teachers with a better understanding of the drivers and impacts of climate change and the mitigation options and to promote their efficiency and confidence in teaching and learning about climate change, equipping them with the necessary subject matter knowledge and teaching strategies.
The Summer School has been designed for teachers to explore methodological, theoretical, and practical aspects, challenges, needs, and possible solutions to the difficult task of explaining the complex issue of climate change, in an interactive way through peer learning activities.
Over the training days, various topics will be explored, such as Climate Education initiatives and good practices, ways to develop the knowledge, skills, and attitudes that students need for the green transition, pedagogical and methodological approaches to teach about Climate Change and techniques to integrate Climate-related topics into the curricula and into a wide variety of lessons on various disciplines.
Furthermore, support will be provided for writing projects that promote teachers' professional development competences and networking.

Learning Objectives of the course

By registering for the CLIMADEMY Summer School, teachers will enhance their repertoire of teaching and learning strategies, their ability to match these to their students' needs, and their commitment to continuous learning and professional development.
The provided professional development approach will equip teachers with the competences they need to feel autonomous and confident when they approach the topic of Climate Change with their class and ultimately to act successfully as change agents.
Through the provided course teachers will:

- Understand the basic aspects of Climate and Climate Change (drivers, impacts, and mitigation options) and acquire solid scientific knowledge.
- Develop useful skills to teach Climate Change in their classroom.
- Be introduced to the CLIMADEMY competence framework which frames the structure of the general and specific goals to pursue through the teaching activities.
- Become familiar with innovative pedagogies and methodological approaches in order to adopt them in their daily practice.
- Participate in an active teaching and learning community of Continuous Professional Development.

Preparation

The summer school will use the CLAUDI platform as a tool to discuss, have access to the material and data, conduct virtual visits, and connect. Make sure you have created an account on the CLAUDI platform, in case you don't have one already, before your arrival .

claudi.chemistry.uoc.gr

Reference Documentation

GreenComp

The Climate Dictionary

European Environment Agency

Sustainability in school education

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2. Italian Hub Course

Dates
26-28 June + 29 June 2024

Location
Bologna, Italy

Venue
Opificio Golinelli
www.fondazionegolinelli.it

Hosting Organisation
Fondazione Golinelli

Link of the Course
fondazionegolinelli.it/it/teacher-courses

Fondazione Golinelli
Fondazione Golinelli is a private institution accredited by the Italian Ministry of Education for teachers training and students education on STEAM. Its head office is Opificio Golinelli, a 14.000 sqm location with labs, facilities, art and science exhibition space for teachers, students, startupper, researchers, family and general public. Fondazione Golinelli deals with education, training, research, technology transfer and venture capital. In particular Fondazione Golinelli supports schools in developing the STEAM curriculum and it takes part in many European projects on science and digital competences. In the 2022-2023 School year it delivered more than 100 teacher training courses, in which more than 6000 teachers, school managers and future teachers have participated. Since 2022 Fondazione Golinelli leads and manages “Scuola delle idee” (School of ideas) the STEAM lower secondary school that is hosted in Opificio Golinelli.

Description of the course
The human side of data: teaching climate change though a STEAM approach. A Summer School on Climate Change and education that enhances the approach and tools that Fondazione Golinelli is developing and experimenting within the European project Climademy with the collaboration of the Research group in science education of the University of Bologna and a network of Italian teachers and co-designer schools.

The course, focused on data humanism and data storytelling, aims to provide a nurturing forum to rethink our ways of communicating and teaching, exploring the potential of STEAM approaches. It is designed to build awareness of the complexity of climate change and interpretation of data but also of the need to imagine possible resolutive scenarios by cultivating hope, in a path in which first the teachers and then the students are leaders and builders of their own knowledge.
Practical workshops and interactive sessions both provide a diverse range of concepts and methods to be integrated in the classroom and help participants to enrich their abilities to design and manage active learning activities for students.
One of the ideas underlying the training is that doing and experimenting are the basis of a fun and a long-life learning, fostering the meeting and a constructive dialogue between science and technology but also between the world of research and school.

Learning Objectives of the course
By attending the CLIMADEMY Summer School, teachers will focus on environmental education; they will be immersed into a community of pairs exploring together new learning/teaching strategies and the potential of new approaches to teaching climate change to the next generation of European citizens.

The course gives the opportunity to create a network and community of practice to create innovative strategies and programs for preparatory and continuous professional development on climate change and its impacts. The use of a STEAM approach as an access point for guiding student inquiry, dialogue, and critical thinking, permits to develop learning units based on real-world applications, with the main goal to imagine and solve real-world problems through hands-on learning activities and creative design.

Test and discuss some exemplary activities that can be replicated in different contexts and on different contents

- Become familiar with STEAM approaches in order to adopt it in their daily practice also with reference to climate change issues
- Take part in the active teaching and learning community of Cimademy for continuous professional development on climate change. Share common values, ideas and practices with other teachers and researchers
- Be introduced to the pedagogical and methodological tools with reference to Climademy competence framework to design educational experiences for students and facilitate the activities of other colleagues
- Learn how to use climate change data in order to connect the planetary dimension with the territorial and personal one
- Enlarge knowledge and skills about how to teach Climate Change issues in their classroom.
- Reinforce the understanding and the scientific knowledge of some basic aspects of Climate and Climate Change

Preparation
In May 2024 a webinar will be organized for registered teachers to get to know each other, to start experimenting with the virtual environments of the course (Miro and CLAUDI) and to deepen into the organizational and thematic details of the summer school.

Resources
Miro as collaborative space. If you don’t already have an account, you can create a personal one for free in advance.
miro.com

CLAUDI platform (https://claudi.chemistry.uoc.gr/) to share teaching, didactical materials and data. Make sure you have created an account before your arrival.
claudi.chemistry.uoc.gr

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3. Finnish Hub Course

Dates

1-3+4-5 September 2024

Location

Hyytiälä, Finland

Venue

Hyytiälä Forestry Field Station

helsinki.fi/en/research-stations

Hosting Organisation

University of Helsinki

Link of the Course

Teachers' Climate Change Forum

University of Helsinki

The University of Helsinki is Finland's largest and oldest academic institution and an innovative centre of science and thinking. Since 1640, we have contributed to the establishment of a fair and equal society that is considered one of the best in the world. Today, our multidisciplinary academic community solves problems that affect us all – with the power of knowledge, for the world.
University of Helsinki Science Education (a part of national LUMA Centre Finland) and Institute for Atmospheric and Earth System Research (INAR) are organizing international Teachers' Climate Change Forum 2024 (TCCF) continuous professional development program for teachers in all levels of education.

Description of the course

nternational CLIMADEMY autumn school, Teachers' Climate Change Forum 2024, deals with climate science, climate education and the connection between these two domains. The forum has been organized since 2017. In 2019 it was arranged in the Hyytiälä Research Station, and in the years 2020-2022 online. Since 2023 as an event with hybrid lectures with both onsite and online discussion and hands on workshops in Hyytiälä.
In 2024 afternoon sessions are held in English and can be attended remotely. Mornings are on site in Hyytiälä research station, where there will be hands on work with teachers and community building.
There is a possibility to create hubs outside Finland where local teachers can attend the forum together, meet each other and discuss on afternoon workshop topics. You can also choose to attend only the virtual event in the afternoons.
Before the Teachers' Climate Change Forum we recommend you to orientate towards climate change education with Climate.now -MOOC. It is a course on the basics of climate system, its change and effects of the change, how to mitigate and adapt to changing climate. In addition to providing the basic knowledge, another equally important goal is to reinforce the student's understanding of climate change as a deep human and societal challenge and to give everyone the means to participate in resolving it.

Learning Objectives of the course

TCCF provides teachers with the opportunity to network internationally with colleagues and researchers interested in climate and sustainability themes. Collaboration between contributors to climate education and climate research is of great importance in the midst of the climate crisis. This training provides a space and time for this networking at the Hyytiälä Forest Field Station, situated in an authentic forest research environment with excellent facilities. By participating to the Teachers Climate Change Forum, providing opportunity in continuous learning and professional development of teachers where they can enhance repertoire of teaching and learning strategies as well as their ability to match these to their students' needs.

Through the provided course teachers will:

- Develop useful skills to teach Climate Change in their classroom.
- Be introduced to the CLIMADEMY competence framework which frames the structure of the general and specific goals to pursue through the teaching activities.
- Become familiar with innovative pedagogies and methodological approaches in order to adopt them in their daily practice
- Share ideas and best practices with researchers and teacher colleagues as well as foster professional connections
- Participate in an active teaching and learning community of Continuous Professional Development.

Preparation

Before the Teachers' Climate Change -Forum we recommend you to orientate towards climate change education with Climate.now -MOOC. It is a course on the basics of climate system, its change and effects of the change, how to mitigate and adapt to changing climate. In addition to providing the basic knowledge, another equally important goal is to reinforce the student's understanding of climate change as a deep human and societal challenge and to give everyone the means to participate in resolving it.

climate.now

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4. German Hub Course

Dates
13.2, 29.2, 14.3 / 2024

Location
Bremen, Germany

Venue
University of Bremen
uni-bremen.de

Hosting Organisation
University of Bremen

University of Bremen
The University of Bremen is a young medium-sized German university with around 20,000 students. Since its establishment, the university has promoted interdisciplinary, explorative learning, and social relevance to practice-oriented project studies, which enjoy a high reputation in the academic world and business and industry.

Within the University of Bremen, the hosting Institute of Environmental Physics (IUP) is one of the leading European research institutions in space-based air quality and climate studies. IUP investigates the Physical and Chemical processes, which determine the behavior of the system comprising the Sun, the Earth, and its Atmosphere. Its overarching objective is to understand the mechanisms controlling the Earth System and its response to change. This goal requires the development and use of remote sensing techniques as well as the intercomparison with models to interpret the observations and improve the prediction of change.

An important component of the Institute of Environmental Physics is its strong involvement in four educational programs Masters in Environmental Physics (PEP), Space Sciences and Technologies (Space-ST), Master of Science in Space Engineering, and the “Postgraduate International Programme of the Faculty of Physics and Electrical Engineering (PIP). These programs dedicated to undergraduate and graduate-level education, are taught in English and have a strong international component, providing an ideal framework for training in Environmental Physics on all levels.

Description of the course
The winter school in Bremen in November 2024 comprises three main sessions.
a) Understanding the Atmosphere: From Air Pollution to Climate Change and its Consequences
b) From Pixels to Patterns: Observing Climate Change with Satellite Data
c) When Numbers Speak: Practical Insights into Climate Models

The first training session is a theoretical one that aims to provide information on fundamental scientific concepts of climate change, its drivers and impacts. Open questions and multiple-choice answers will be discussed in groups.

The goal of the second session is to provide information on satellites, monitoring techniques and usage of data from satellites. The training is divided in three sections: i) spectrometry and climate, ii) from space to climate and iii) orbiting the climate. Teachers will have the opportunity to work with a spectrometer, to explore satellite data and to understand their importance in climate change monitoring.

This last activity will introduce the participants to the concept of mathematical models. Teachers will get to know how computational modeling is used in climate sciences. Moreover, they will get hands-on experience with a simplified climate model where they will work in groups to assess various climate scenarios, such as, what the temperature of the planet will be if we do not change the way we are living and the emissions from humans remain at the high-levels they are now.

Learning Objectives of the course
The winter school offers participants foundational insights into atmospheric chemistry, physics, and the greenhouse effect. Emphasis is placed on scientific methodologies used in climate change studies, fostering curiosity and engagement.

The curriculum highlights the crucial role of satellite technology in advancing climate science, instilling a positive view of satellite data’s importance in addressing climate change. The participants can creatively engage with satellite data, exploring its diverse applications as well as finding the different limitations of satellite-based observations.

The teachers will use a simplified global climate model to simulate scenarios, exploring the impacts of climate change on temperature, sea levels, and extreme weather events. They will have the opportunity to test different emission mitigation strategies to understand their impact on climate change and then will be encouraged to reflect on how realistic these scenarios are.

Through these activities, the program aims to deepen understanding, emphasizing the urgency for collective action and instilling a sense of responsibility among participants. Using the venue of the University of Bremen enables the usage of available equipment/instruments to experience and explore the presented foundations of climate change firsthand.

Preparation
Before the winter school in Bremen 2024 we recommend, that you check the material on CLAUDI

claudi.chemistry.uoc.gr

Additionally, bring your computer/tablet with internet access. These will be used to explore a climate model in class to obtain some hands-on experience.

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5. Greek Hub Course

Dates

3-5 November 2024

Location

Finokalia, Greece

Venue

Finokalia Hub

https://finokalia.chemistry.uoc.gr/

Hosting Organisation

University of Crete

University of Crete

The University of Crete is a multi-disciplinary, research-oriented public educational institution. Located at campuses in Heraklion and Rethymnon on the island of Crete, a site rich in ancient and modern Mediterranean cultures. The University offers a vibrant social and intellectual environment for research and education.

The Science Education Lab (SEL) and the Environmental Chemical Processes Laboratory (ECPL) are collaborating and offering training activities focusing on informal settings of STEM education.

The SEL focuses on research about the educational use of digital technologies and the integration of the educational innovations of ICT such as data loggers, virtual & augmented reality, and educational robotics in STEM teaching.

The SEL gives emphasis on pre-service & in-service teacher education and also studies the influence of informal and out-of-school contexts in STEM education. Considering its educational role, the lab offers training to pre- and in-service primary teachers both in content knowledge and teaching methodology knowledge in the domains of science, mathematics, and technology. The main educational goals of the SEL are a.) educational reconstruction of contemporary research topics such as Climate Change, b.) cultivating inquiry and engineering skills in pre- and in-service teachers, through the construction of interactive artifacts which relate to real-world STEM projects and c.) concurrently address contemporary socioscientific issues.

The ECPL research focuses on chemistry-transport and Earth system numerical modeling, environmental data acquisition and interpretation. A wide range of activities offers training of students and young researchers on climate change and environmental topics and a specialized master program on Environmental Science and Engineering has been established since 1998. ECPL operates the atmospheric observatory at Finokalia Crete (http://finokalia.chemistry.uoc.gr) since 1993 that contributes to National and International networks. ECPL has state of the art instrumentation for environmental analyses and has access to large analytical infrastructure of the department of Chemistry and UOC. ECPL has also access to the central HPC of the University of Crete as well as to the National Infrastructures for Research and Technology in Greece (GRNET) that are used only for operational simulations. ECPL also has its own computer cluster for developing and running thermodynamic models, chemistry-transport models, as well as data analysis and visualization.

Description of the course

During the course the participating teachers will initially get familiarised with the Climademy competence framework regarding:
i) the objectives of climate change education in terms of developing students competences on values & attitudes towards climate change, knowledge of core concepts of climate change and scientific inquiry skills, creativity for the use of this knowledge to recognise climate challenges and design possible solutions and decision-making and action-taking skills.
ii) ways to assess these kinds of competences, in terms of diagnostic, summative and formative assessment methods with the use of concept mapping, rubrics, portfolios etc.
Afterwards, participating teachers will engage actively with the implementation of activities based on the aforementioned framework that also make use of real data from the monitoring environmental stations of Finokalia.

Indicatively, activities that are related with the monitoring environmental station of Finokalia, delve into: i) the distinction between Weather and Climate, making use of temperature data over the last 20 years, ii) the effect of CO_2 on Climate Change, using data of atmospheric CO_2 concentrations over the last 30 years, iii) the calculation of our personal carbon footprint based on data regarding the CO_2 emissions of our household appliances and means of transport, iv) the contribution of Renewable Energy Resources for limiting our personal carbon footprint etc.

By the end of the workshop participating teachers will be called to reflect on the integration of climate change topics in their country's science curricula, the need for developing students' climate change competences, and the affordances that activities based on real data from monitoring environmental stations provide, towards meeting the aforementioned needs.

Learning Objectives of the course

The autumn school in Finokalia in November 2024 aims at equipping in-service STEM teachers to be able to incorporate in their lessons cutting-edge and controversial topics such as Climate Change by providing support in terms of novel educational methods (e.g. inquiry-based teaching, use of informal learning environments, use of real data) and in terms of scientific content knowledge
Particularly the Finokalia autumn school will provide teachers with examples of activities on climate change, its drivers, impacts and mitigation measures that make use of real data from the monitoring environmental station of Finokalia, Crete, Greece

Preparation

The CLAUDI platform will be used to facilitate discussions, provide access to materials and data, perform virtual visits, and link participants. If you don't already have an account on the CLAUDI platform, you can create one in this link:
https://claudi.chemistry.uoc.gr/

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