

## Lecturer's CVs

**Name:** Georgios Sylaios

**Background:** BSc in Geology; MSc and PhD in Oceanography

**Specialization:** Physical Oceanography; Marine data analysis for end-users needs; Numerical modeling, satellite data and in-situ sensors.

**Contacts:**

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**Name:** Vasileios Diamantis

**Background:** PhD in Environmental Engineering

**Specialization:** Anaerobic Digestion Technology

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**Name:** Alexandra Gkemitzi

**Background:** PhD in Civil Engineering – Aristotle University of Thessaloniki, M.Sc in Groundwater Engineering, University of Newcastle Upon Tyne, UK, B.SC in Geology, Aristotle University of Thessaloniki

**Specialization:** GIS – Remote sensing, climate change assessment

**Contacts:**

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**Name:** Nikolaos Koutsias

**Background:** PhD at the Department of Forestry and Natural Environment, Aristotle University of Thessaloniki (Remote Sensing and GIS of Forest Fires), M.Sc. at the International Center for Advanced Mediterranean Agronomic Studies. Mediterranean Agronomic Institute of Chania.

**Specialization:** Environmental Informatics, Remote Sensing and Geographical Information Systems

**Contacts:**

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**Name:** Dimitrios Komilis

**Background:** B.Sc. in Environmental Science, University of the Aegean (Greece), M.Sc. Ph.D. in Civil and Environmental Engineering, University of Wisconsin-Madison (USA).

**Specialization:** Solid Waste Management

**Contacts:**

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**CV:** [Link to CV](#)

**Name:** Pavlos Toumpoulidis

**Background:** MEng in Environmental Engineering, MSc in Environmental Engineering and Science, PhD Candidate at the Department of Environmental Engineering, Democritus University of Thrace, Greece

**Specialization:** Extensive research on Renewable Energy Sources and energy saving systems in Building Sector

**Contacts:**

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**Name:** Ioannis Nikolaou

**Background:** BSc in Economics Athens University of Economics and Business, Department of Economics, MSc University of the Aegean, MPS Environmental Policy and Management, Department of Environment, Ph.D. University of the Aegean, MPS Environmental Policy and Management, Department of Environment.

**Specialization:** Environmental Business Management, Business Circular Economy Models, Green Entrepreneurship, 2030 Agenda for Sustainable Development, Corporate Social Responsibility.

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**Name:** Maria Zoidou

**Background:** BSc in Chemical Engineering, MSc in System Engineering and Management, PhD Candidate

**Specialization:** biogeochemical processes in coastal ecosystems, ecosystem services

**Contacts:**

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**Name:** Konstantinos Zachopoulos

**Background:** BSc in Marine Sciences, University of the Aegean, Greece; MSc in Marine Renewable Energy, Heriot-Watt University, U.K.; Ph.D. Candidate in Democritus University of Thrace, Greece

**Specialization:** Coastal Erosion; Satellite data analysis; GIS; Hydrodynamic modeling; Marine Renewable Energy simulation

**Contacts:**

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Website: [Link to website](#)

**Name:** Andreas Apostolidis

**Background:** BSc with Integrated MSc in Electrical and Computer Engineer, Democritus University of Thrace, MSc Student of Energy Systems Technologies and Exploitation of Renewable Energy Sources, Democritus University of Thrace

**Specialization:** Electrical Power Systems

**Contacts:**

Email: [apostolidis.andreas95@gmail.com](mailto:apostolidis.andreas95@gmail.com)

**CV:** [Link to CV](#)

**Name:** Maria Kofidou

**Background:** BSc in Agricultural Surveying Engineering, Polytechnic School, Aristotle University of Thessaloniki; MSc in the Department of Civil Engineering of Democritus University of Thrace on 'Organization and Management of Technical Systems'; MSc in the Department of Environmental Engineering of Democritus University of Thrace on 'Environmental Engineering and Science'; Ph.D candidate on 'Adaptation and harmonization of multi - source satellite data for assimilation in hydrological models as well as for hydrological optimization simulations'

**Specialization:** Designer of Hydraulic and Topographic Studies and elaboration of studies for public bodies, agricultural programs.

**Contacts:**

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**CV:** [Link to CV](#)

# Course Description

**Title:** There is no PLANet B

**Fields of activity:** Agronomics/Forestry, Applied Sciences, Chemical Engineering, Civil Engineering, Computer Science/Automatic Control/Informatics, Economics/Business Administration/Marketing, Electrical/Electromechanical Engineering, Environmental Engineering, Geology, Physics/Physics Engineering, Production Engineering/Management, Rural and Surveying Engineering

**Examination type:** Written Exam

**Number of ECTS credits issued:** 0

**Learning Goals and Objective:** In this online course, participants will learn about climate change and innovative green solutions, such as the policy of the circular economy, waste management and alternative energy sources. They will also be introduced on how to handle satellite data through specialised platforms/programs.

# Syllabus

Name of activity	Digital Ocean: Collecting, processing and providing marine data for end users and stakeholders
Number of working hours	2
Type of activity	1 hour Lecture & 1 hour Tutorial
Lecturer	Georgios Sylaios
Short summary of content	<ul style="list-style-type: none"> <li>• ODYSSEA Project and Objectives</li> <li>• Modern sensors, satellites, models</li> <li>• Examples using advanced algorithms (data fusion, data and text mining, machine learning, ANNs)</li> <li>• The Marinomica platform for services and products to end-users</li> </ul>
Bibliography	No bibliography needed
Expected effect	Participants will gain basic knowledge on current challenges of marine science, the modern advances in Earth Observation Systems, the developments in ODYSSEA project and the use of Marinomica Platform for services and products to end-users.

Name of activity	Introduction to biogas technology
Number of working hours	1
Type of activity	Lecture
Lecturer	Vasileios Diamantis
Short summary of content	<ul style="list-style-type: none"> <li>● Introduction to the EU Methane strategy</li> <li>● Fundamentals of Anaerobic Digestion technology</li> <li>● Agro-industrial SMEs in numbers</li> <li>● Type of anaerobic reactors</li> <li>● Anaerobic digesters at EU level</li> <li>● Biogas valorization technologies</li> <li>● Example - calculations</li> </ul>
Bibliography	Everything needed is provided in the <b>pre-materials*</b> down below.
Expected effect	Participants will gain basic knowledge about the importance of anaerobic digestion to mitigate methane emissions, biogas production fundamentals and technologies, and techniques for biogas valorization. Considering a selected case study, the participants will finally be instructed to perform some basic calculations on biogas production and valorization.

Name of activity	Introduction to Environmental Monitoring with Google Earth Engine
Number of working hours	1.5
Type of activity	Lecture
Lecturer	Alexandra Gkemitzi
Short summary of content	<ul style="list-style-type: none"> <li>• Basic information Google Earth Engine</li> <li>• Remote sensing data sets in GGE</li> <li>• Examples of NDVI time series visualization and analysis</li> </ul>
Bibliography	Everything needed is provided in the <b>pre-materials*</b> down below.
Expected effect	Participants will gain basic knowledge about Environmental Data Analysis using cloud computing within Google Earth Engine. This includes: Remotely sensed data sets such as MODIS and Landsat 8 LST and NDVI products.

Name of activity	Processing satellite data with R: an example in burned land mapping
Number of working hours	1
Type of activity	0.5 hour Lecture & 0.5 hour Tutorial
Lecturer	Nikolaos Koutsias
Short summary of content	<ul style="list-style-type: none"> <li>• Basic information about remote sensing principles of burned areas</li> <li>• Examples of R scripts to process satellite data for burned land mapping</li> </ul>
Bibliography	Everything needed is provided in the <b>pre-materials*</b> down below.
Expected effect	Participants will be introduced in the processing of satellite images including downloading of satellite data (Landsat and Sentinel-2), pre-processing and processing in RStudio environment with examples to map burned areas.



Name of activity	Solid Waste Management under the scope of circular economy in Greece
Number of working hours	3
Type of activity	Lecture
Lecturer	Dimitrios Komilis
Short summary of content	<ul style="list-style-type: none"> <li>• Circular economy and solid waste management</li> <li>• Status of solid waste management in Greece</li> <li>• Prospects of solid waste management in Greece</li> <li>• Hellenic solid waste legislation and application of the circular economy framework</li> </ul>
Bibliography	No bibliography needed
Expected effect	Participants will gain basic knowledge on the status of solid waste management in Greece, and the potential of achieving a circular economy in Greece with regard to the solid waste management aspect.

Name of activity	Energy Saving Techniques in Residential Building, Introduction of Photovoltaic applications in Residential Building
Number of working hours	5
Type of activity	2.5 hours Lecture & 2 hours Tutorial & 0.5 hour Laboratory Work
Lecturer	Pavlos Toumpoulidis
Short summary of content	<ul style="list-style-type: none"> <li>• Bioclimatic Design and energy saving techniques in Residential Building</li> <li>• Basic principles of Bioclimatic Design</li> <li>• Overview of active and passive systems used in construction or renovation of buildings</li> <li>• Basic sizing of insulation system</li> </ul>
Bibliography	No bibliography needed
Expected effect	Participants will gain basic knowledge about Bioclimatic Design and also the energy saving systems used to introduce them to their work related to these topics. This includes: What are the principles of Bioclimatic Design actually, what are the active and passive systems and how are they used in reduction of energy in buildings, basic calculations and programs used in sizing of active and passive systems.

Name of activity	Corporate environmental management and circular economy
Number of working hours	1
Type of activity	Lecture
Lecturer	Ioannis Nikolaou
Short summary of content	<ul style="list-style-type: none"> <li>• Corporate environmental management</li> <li>• Corporate social responsibility</li> <li>• Corporate sustainability report analysis</li> <li>• Circular business cycle</li> </ul>
Bibliography	No bibliography needed
Expected effect	Students will strengthen the theoretical background regarding corporate environmental management, corporate social responsibility and circular business cycle. They will also get familiar with corporate sustainability report analysis methodologies such as content analysis, scoring/benchmarking systems.

Name of activity	Digital data platforms and products for the marine environment
Number of working hours	1
Type of activity	Tutorial
Lecturer	Maria Zoidou
Short summary of content	<ul style="list-style-type: none"> <li>• What is the Copernicus Marine Environmental Monitoring Service (CMEMS)</li> <li>• Which are the CMEMS Products and Services</li> <li>• How to view available CMEMS parameters and data online</li> <li>• How to download CMEMS parameters and data via web browser</li> <li>• How to view available CMEMS parameters and data locally (on PC)</li> <li>• What is European Marine Observation and Data Network (EMODnet)</li> <li>• EMODnet Data Portals</li> <li>• How to access and retrieve EMODnet Bathymetry data</li> </ul>
Bibliography	Everything needed is provided in the <b>pre-materials*</b> down below.
Expected effect	Participants will gain basic knowledge on what are the CMEMS and Emodnet platforms, the information and data they can provide, and how to view and download these data.

Name of activity	Monitoring coastal erosion patterns from space: Coastal erosion 'hotspots' and trend analysis
Number of working hours	2
Type of activity	0.5 hour Lecture & 1.5 hour Tutorial
Lecturer	Konstantinos Zachopoulos
Short summary of content	<ul style="list-style-type: none"> <li>• Introduction to Remote Sensing</li> <li>• Open-source databases for satellite images</li> <li>• The methodology applied in a coastal erosion assessment</li> <li>• Shoreline Extraction from historical satellite images</li> <li>• Evaluation of the shoreline evolution</li> </ul>
Bibliography	Everything needed is provided in the <b>pre-materials*</b> down below.
Expected effect	Participants will gain basic knowledge on topics related to the phenomenon of coastal erosion. The remote sensing principles, several open-source databases for satellite image download, and historical satellite image selection criteria will be presented. Moreover, using Geographic Information Systems (GIS), participants will be trained to shoreline extraction from satellite images and shoreline evolution through the years, using the SCP plug-in for QGIS and the Digital Shoreline Analysis System (DSAS) tool for ArcGIS.

Name of activity	Integration of Renewable Energy Sources into the existing European energy grid and reduction of GHG emissions
Number of working hours	1
Type of activity	Lecture
Lecturer	Andreas Apostolidis
Short summary of content	<ul style="list-style-type: none"> <li>• Basic information about Power Systems, Renewable Energy Sources (RES) and GHG emissions</li> <li>• Presentation of the specified limits and the energy policy that European Union will follow in the next years, in order to achieve reduction of GHG emissions</li> <li>• The contribution of RES to the reduction of GHG</li> <li>• Problems with the integration of RES into existing energy grids</li> <li>• Presentation of X-FLEX H2020 project</li> <li>• Solutions that X-FLEX propose</li> </ul>
Bibliography	No bibliography needed
Expected effect	<p>At the beginning, participants will gain basic knowledge about Power Systems. All the basic components of a Power System will be explained: from the generation to the final consumer. Next all the basic technology about Renewable Energy Sources will be presented, focusing on PV Systems and Wind Power. Participants will see the operating principles of these two RES, the technology that we adopt today and the general benefits of their usage, will be analyzed. Then, we will talk about GHG emissions and all the limits that European Union has specified until 2030 and 2050 will be presented in different images and tables. Also, an illusion to the energy strategy and policy in the next few years will be made. In the next part of the lecture, the contribution of RES to the reduction of GHG emissions will be</p>

	<p>presented and participants will understand the significance of RES and why we call them “The future of energy”. However, due to the distributed generation (DG) and the absence of central control, the integration of RES into the current energy system is much smaller than it could be. X-FLEX, an innovative European program funded by Horizon 2020, will provide some solutions to this problem. So, the participants in the last part of the presentation will get an idea of what exactly X-FLEX is, in which phase it is now and finally what it will offer to the overall European energy grid.</p>
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Name of activity	Working in Google Earth Engine environment
Number of working hours	1.5
Type of activity	0.5 hour Tutorial & 1 hour Laboratory Work
Lecturer	Maria Kofidou
Short summary of content	<ul style="list-style-type: none"> <li>• Introduction in Google Earth Engine</li> <li>• Application in Google Earth Engine</li> </ul>
Bibliography	Everything needed is provided in the <b>pre-materials*</b> down below.
Expected effect	Participants will gain basic knowledge about Environmental Data Analysis using cloud computing within Google Earth Engine.

Name of activity	Examination preparation
Number of working hours	1
Type of activity	Individual Work
Lecturer	Pavlos Toumpoulidis
Short summary of content	Preparation for the final examination
Bibliography	All the lectures, tutorials & laboratory works
Expected effect	The participants will be given the chance to prepare for the final examination and ask for clarifications from the lecturer.



Name of activity	Examination
Number of working hours	1
Type of activity	Written exam
Lecturer	Pavlos Toumpoulidis
Short summary of content	Final examination in the form of the written exam
Bibliography	All the lectures, tutorials & laboratory Works
Expected effect	Sum up of everything covered throughout the course

# Pre-materials

<b>Name</b>	<a href="#">EU Methane Stragedy</a>
<b>Topic/field</b>	Anaerobic Digestion Technology

<b>Name</b>	<a href="#">Developers-Earth Engine Tutorials</a>
<b>Topic/field</b>	Environmental Monitoring

<b>Name</b>	<a href="#">Timelapse-Earth Engine</a>
<b>Topic/field</b>	Environmental Monitoring

<b>Name</b>	<a href="#">Platform-Earth Engine</a>
<b>Topic/field</b>	Environmental Monitoring

<b>Name</b>	<a href="#">Developers-Earth Engine Data</a>
<b>Topic/field</b>	Environmental Monitoring

<b>Name</b>	<a href="#">Earth Engine</a>
<b>Topic/field</b>	Environmental Monitoring
<b>Short description</b>	Participants should have a google account and they login to GGE using their gmail

<b>Name</b>	<a href="#">Copernicus Marine Service</a>
<b>Topic/field</b>	Marine Environmental Monitoring

<b>Name</b>	<a href="#">EMODnet Platform</a>
<b>Topic/field</b>	Marine Observation

<b>Name</b>	<a href="#">Earth Explorer</a>
<b>Topic/field</b>	Satellite Image Database

<b>Name</b>	<a href="#">Copernicus Hub</a>
<b>Topic/field</b>	Satellite Image Database

<b>Name</b>	<a href="#">Planet Explorer</a>
<b>Topic/field</b>	Satellite Image Database

<b>Name</b>	<a href="#">SCP plug-in</a>
<b>Topic/field</b>	Coastal & Marine Monitoring

<b>Name</b>	<a href="#">DSASTool</a>
<b>Topic/field</b>	Coastal & Marine Monitoring (plug-in)

<b>Name</b>	<a href="#">QGIS</a>
<b>Topic/field</b>	Engineering Tools

<b>Name</b>	<a href="#">ArcMap</a>
<b>Topic/field</b>	Engineering Tools

<b>Name</b>	<a href="#">R Studio</a>
<b>Topic/field</b>	Satellite Image Database
<b>Short description</b>	R and RStudio installed in the participant's computer is necessary. Data and scripts are going to be indicated in a dropbox link.