

## Location



Aveiro can be easily reached from either Porto or Lisbon airports. While Lisbon has a wider range of international flights Porto is a major hub for Ryanair. Aveiro is connected to both Porto and Lisbon by high-speed train (about 2 hours from Lisbon, about 30 minutes from Porto). Both train stations are connected by subway to their respective airports. In case of Porto a suburban train is only marginally slower and quite cheap.

Aveiro itself is called „Venice of Portugal“ due to its large lagoon. Its coastal areas (Barra and Costa Nova) are well known for their wide and sandy beaches. Most of the beaches are surveilled during summer time. The lagoon and the salt exploration areas are well worth a visit, particularly by moliceiro boat. Nearby Aveiro are Porto and Coimbra. Porto is a commercial town, most famous for its port wine while Coimbra is an old University town while Coimbra is an old University town.



**University of Aveiro**  
3810-193 Aveiro  
Portugal

## Coordination

### Advanced Training Course:

#### University of Aveiro

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### Project Coordinator :

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**Erasmus+**

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**Bauhaus-  
Universität  
Weimar**



**RUHR  
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BOCHUM**



### PARFORCE

Partnership for Virtual  
Laboratories in  
Civil Engineering

### Ph.D. Advanced Training Course:

Applied and computational mathematics in  
engineering application

### Online Phase:

13<sup>th</sup> - 24<sup>th</sup> February , 2023

### Hybrid Phase:

6<sup>th</sup> - 10<sup>th</sup> March, 2023

[www.uni-weimar.de/Erasmus\\_SP](http://www.uni-weimar.de/Erasmus_SP)

# Description

## ADVANCED TRAINING ACTIVITY

### Addressed Topics:

- \* Inverse problems;
- \* Signal processing (analysis of monitoring data, Pre-processing of acquired data);
- \* Bayesian statistics;
- \* Machine learning methods based on reproducing kernels;
- \* Artificial neural networks and deep learning.

### Students learning outcomes:

- \* to choose and implement correct regularization algorithms for a given inverse problem;
- \* to pre-process and analyze experimental data;
- \* to evaluate the quality of numerical methods/algorithms for a given mathematical model
- \* to analyze errors and their propagation in mathematical models;
- \* to implement and train a machine learning algorithm;
- \* to setup and properly work with virtual reality experiments;
- \* Students will be able to work in an international environment and practice their management, presentation, and language skills.

### Target Group:

PhD students in the fields of civil engineering and mathematics.

### Prerequisite:

Prerequisite for participation in addition to adequate English skills, are the submission of a meaningful motivation letter and an abstract with respect to current personal scientific activity which mediates the interest or the ability to edit the project themes. After successful completion of this course you will receive a certificate of participation. It will show the course title, the date and duration of the course, the number of contact hours as well as the main contents and topics.



# Schedule

The course will be divided into two parts:

An online part and a one-week hybrid part where selected students will be taught in a classic presental environment while a second group will follow the lecturers online.

This allows to use these courses as testbed for a comparison between online and in-class training and teaching methods. To this end the online part of the course will be given by a combination of synchronous and asynchronous training to boost students' background for the hybrid part which can then be efficiently used for the overall project work and discussion/reflection of knowledge.

**ONLINE PHASE:**  
13TH - 24TH FEBRUARY, 2023

**HYBRID PHASE:**  
6TH - 10TH MARCH, 2023

## SCHOLARSHIP

Scholarships including travel and subsistence costs are available provided by the ERASMUS+ Strategic Partnerships 2020 for "Digital Education" program. Scholarships are only available for PhD students from the partner universities. Only direct travel cost can be considered.

**APPLICATION  
DEADLINE  
February 5<sup>th</sup> 2023**