

Physics Informed Neural Networks Applications to Geotechnical Engineering (3 ECTS)

We are happy to invite to the 2nd edition of the ENHANCE BIP on Physics-Informed Neural Networks (PINNs)!

The aim of this program is to gain an understanding of the principles behind physics-informed machine learning, as well as to explore various scenarios in which these methods can be applied. The course consists of two parts: an online introductory course and a workshop that will be held on-site at RWTH.

1. Online introduction (July 22 - 26)

During these two days, the principles behind machine learning are discussed. This includes data preparation, optimization, and different statistical models. A special focus will be on neural networks and their relationship with gradients and differential equations. The online part will also feature an introduction to the tools the students will work with, which is mainly Python code written in Jupyter Notebooks.

2. Workshop at RWTH (July 29 – August 2)

During this week, the students will apply their newly gained theoretical knowledge in a hackathon-style workshop. Different tasks and problems will be provided, which will be solved by the students in a collaborative and informal setting. The goal of this session is to deepen the skills gained in the theoretical seminar and to share knowledge among participants. The practical nature of the workshop will also lead to a better understanding of the implementation, chances, and limitations of physics-informed machine learning methods. Last but not least, the hackathon is also a great opportunity to crack interesting modelling problems and network with students and faculty from different countries.

APPLICATION DEADLINE: June 16 | **NOTIFICATION BY: June 28** | **FUNDING AVAILABLE** (*contact you ERASMUS office*)



Time and Place

22.07. – 02.08.2024

Institute for Geomechanics and Undergroundtechnology (GUT), RWTH Aachen University

Mies van der Rohe Straße 1
52074 Aachen

www.gut.rwth-aachen.de

Registration

You can register attendance via this link:

www.tinyurl.com/P1NNs

Miscellaneous

Agenda and room placement will be published in due time. During the presence-week evenings we will offer some social after-hours activities such as a city tour and a pub crawl.