# ERASMUS+ TRAINEESHIP / PLACEMENT OFFER

**Project title:** Fluid-structure interaction in heterogeneous porous media

**Project description:**

In many problems of industrial and scientific interest, a fluid flows through a non-uniform porous medium. Examples are underground oil extraction, coffee production in an espresso machine, and the drying process of grains in the agro-industry to prevent fungal proliferation. In these systems, regions with lower porosity cause greater resistance to fluid flow producing a nontrivial flow response, specially if the solid obstacles interact with the flow as it occurs in erosion and deposition. The objective of this project is to study the flow of a fluid through a porous medium and how the response of the medium to the fluid passage can affect the dynamics. The proposed study is simulational, using the Boltzmann lattice method, which is suitable for complex geometries such as porous media. We will study how heterogeneities in a time-changing porous media are affected by the fluid flow.

**Department:** Physics

**R&D Unit:** CFTC - Centro de Física Teórica e Computacional

**Field of study:** Soft Matter

**Supervisor:** Rodrigo Coelho and Nuno Araújo    **Personal webpage:** http://cftc.fc.ul.pt

**Number of weeks offered:** 16 (or more)    **Within the months:** from January to December

**Number of working hours per week:** 30

**Publication date:** 25 / 09 / 2019    **Closing date:** 01 / 01 / 2022

## Requirements

General:
- A very good academic record;
- Good writing and presentation skills;
- Good social and organisational skills;
- Very good proficiency in spoken and written English; knowledge of Portuguese language is an asset.

Specific:
- Level of education: Bachelor's or Master's degree in Physics, Math, Engineering or related areas ;
- Good programming skills in C/C++. Basic knowledge of Python is of help. ;
- Knowledge in fluid dynamics and lattice Boltzmann are desirable but not required. .

## Applications

Applications should include the following information:
- a cover letter, including a description of your research interests and an explanation for why you are applying for this project;
- a curriculum vitae (CV);
- an official transcript of grades issued by your home institution;

and be submitted no later than 01 / 01 / 2022 via email to internacional@ciencias.ulisboa.pt.

## Contacts

For inquiries regarding this project you are welcome to contact: rccoelho @ciencias.ulisboa.pt.

For inquiries regarding the application procedure you are welcome to contact: internacional@ciencias.ulisboa.pt.