



As part of the **Data4Water EU Twining** project, we are organizing a series of training sessions. This session is organised in Bucharest by [University of Milano-Bicocca](#) and [University Politehnica of Bucharest](#).

This training session entitled *Using reinforcement learning to solve water management problems* is targeted at PhD/MSc/undergrad students and early career researchers and takes place from the 21st of November to the 22nd of November 2018.

We look forward to seeing you in Bucharest soon. The training session will take place at the *Faculty of Automatic Control and Computers, University Politehnica of Bucharest*.

The detailed syllabus of the training courses covers three main aspects, as follows:

I. LECTURES

1. **Introduction to Reinforcement Learning**
2. **How to act given know how the world works.**
 - a. *MDP (tabular representation)*
 - b. *DP*
 - c. *Value iteration, policy iteration policy search*
3. **Learning to evaluate a policy when don't know how the world works**
 - a. *Approximate Dynamic Programming*
4. **Model-free learning to make good decisions**
 - a. *Off-policy → Q-Learning*
 - b. *On-Policy → SARSA algorithm*
5. **Scaling-up: value function approximation**
 - a. *Continuous State Space, Continuous State and Action Spaces*
 - b. *A brief overview on Deep Q-Learning*
6. **Policy Search**

II. PRACTICALS

1. **Real-world example: Pump Scheduling Optimization through Reinforcement Learning**
2. **Open source tools for Reinforcement and practical examples**

Trainers:

- **Prof. Antonio Candelieri**, *Università degli Studi di Milano-Bicocca*
- **Prof. Francesco Archetti**, *Università degli Studi di Milano-Bicocca*



Location and Lecture Room:

The training courses will be held in [PRECIS-UPB](#), room number 608 (6th floor – next to the lift) .

** *There is no participation fee, but the number of places is limited. To apply please send an email to elena.apostol@cs.pub.ro or catalin.leordeanu@cs.pub.ro.*