

# Artificial Intelligence, Deep Learning & Healthcare

## Facilitators

- **Dr. Francesca Faraci, PhD** (SUPSI/DTI/MeDiTech)
- **Luigi Fiorillo, MSc** (SUPSI/DTI/MeDiTech)

Other research assistants will support during the practical exercises.

## Description

This course will give a broad overview of potentials and limitations of machine learning and deep learning application in healthcare. After providing an overview of pros and cons of different approaches, and a list of examples of its application (both in the image and bio-signal domain), the student will learn the basics of using Python for data analysis, machine learning and deep learning. Data security and ethical issues will shortly be presented from different perspectives.

The course is meant for a generic audience that includes both data scientists, biomedical engineers and clinicians, physicians that are interested in expanding their knowledge.

## Objectives

By the end of the course, students will be able to run a typical Python project: import data from text or Excel files, perform data manipulation (including use of labels), save manipulated data, perform statistical analysis, graphical representation of the data. Students will also be able to execute a script with basic examples of type of data classification.

## Dates

**04 September - 08 September 2023**

## Eligibility

SSPH+ IGC students, external PhD students and other participants are welcome for limited places.

## Course Structure

Lectures, case study analysis and practical exercises. Students could be divided in small groups during practical exercises, depending on their programming skills.

Students will receive predefined scripts and data to practice with, and are encouraged to practice with their own data and present their own research problem/possible application.

The theoretical part in the morning sessions will be supported by pre-recorded videos and SoA publications analysis, whilst for the afternoon laboratories activities with small groups (5-6 persons) are foreseen.

### Assessment

Continuous assessment with short surveys and interaction. At the end of the course a short exam needs to be completed (mainly theory question). The results will be openly discussed. The scope and difficulty of the exam will be similar to the practical exercises of the course.

### Credits

**2 ECTS**

Preliminary Work: 2-4 h; Contact time: 38 h; In-course work: 20 h; Wrap-Up Work: 1 h

(1 ECTS corresponds to appr. 25-30 hours workload)

### Location

online

### Course Fees

IGC course fees	2 ECTS
SSPH+ IGC Students	30 CHF
Postdocs from partner universities	30 CHF
External PhD students and MD students	1'000 CHF
Others	2'000 CHF

### Registration

<https://www.conftool.com/ssph-phd-courses2023/>

### Deadline for registration

04 August 2023