# EXPLAINABLE ARTIFICIAL INTELLIGENCE FOR IMAGES (XAII)

## 1. SYLLABUS INFORMATION

### 1.1. Course title
Explainable Artificial Intelligence for Images (XAII)

### 1.2. University
University de Bordeaux

### 1.3. Semester
3rd

## 2. COURSE DETAILS

### 2.1. Course nature
Compulsory

### 2.2. ECTS Credit allotment
3

### 2.3. Recommendations

### 2.4. Faculty data

## 3. COMPETENCES AND LEARNING OUTCOMES

### 3.1. Course objectives
**Lecturing course**

The rise of Artificial Intelligence − by-Machine Learning approaches, has led to a significant increase in the performance of AI systems. However, it has also raised the question of the reliability and explicability of their predictions for decision-making. It is therefore critical to understand how their predictions correlate with information perception and expert decision-making. The objective of eXplainable AI (XAI) is proposing methods to understand and explain how these systems produce their decisions. The goal of the course for the students is to get knowledge of different methods of explanations of Deep Neural Network decisions. The illustrative example of excellence is visual information: such as images and video and the target task is the classification. Furthermore, the evaluation of these methods is also of primarily importance for choosing the best ones for the explanation problem in hand.

**Tutored learning - Labs (TD sur Machine)**

To practice AI explanation algorithms on known models of Deep Neural networks with OpenSource software in image classification tasks. To practice visualization of explanation maps on the classified images and evaluation metrics computation. To encode a base-line explanation algorithm.

## 4. TEACHING-AND-LEARNING METHODOLOGIES AND STUDENT WORKLOAD

### Lecturing course

*Number of teaching Hours:* 12 hours

*Time of personal student work: 24* hours

### Tutored learning - Labs (TD sur Machine)

*Number of teaching Hours:* 12 hours

*Time of personal student work:* 36 hours

## 5. EVALUATION PROCEDURES AND WEIGHT OF COMPONENTS IN THE FINAL GRADE

*Exam*: coefficient 0.5
*Continuous control:* mark of a short project with coding of one of the XAI methods applied to Deep Neural Networks in Image classification tasks.