

# INVERSION FOR AUGMENTED REALITY

## 1. SYLLABUS INFORMATION

### 1.1. Course title

Inversion for Augmented Reality

### 1.2. University

University of Bordeaux

### 1.3. Semester

2<sup>nd</sup> year, 1<sup>st</sup> semester

## 2. COURSE DETAILS

### 2.1. Course nature

Compulsory

### 2.2. ECTS Credit allotment

3

### 2.3. Recommendations

Basic knowledge in linear algebra and Fourier transform

### 2.4. Faculty data

Prof. Jean-François Giovanelli -IMS [\\_firstname.lastname@u-bordeaux.fr](mailto:_firstname.lastname@u-bordeaux.fr)

## 3. COMPETENCES AND LEARNING OUTCOMES

### 3.1. Course objectives

This course is the complement of the Augmented and Virtual Reality course. We will develop the required theoretical and practical tools based on linear algebra, variational techniques, robust numerical optimization, including penalties and constraints, etc. and for more recent works, machine learning. From the class, the students will learn many concepts from 3D geometry, practical numerical optimization, robust estimation, etc.

### 3.2. Course contents

Advances in image deconvolution

- Linear and nonlinear approaches
- Resolution enhancement
- Numerical results and examples of application

### 3.3. Course bibliography

- J.-F. Giovannelli, and J. Idier, "Regularization and Bayesian Methods for Inverse Problems in Signal and Image Processing", ISTE Ltd and John Wiley & Sons Inc, February 2015.

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

Activity	Hours
Lectures	12
Practical work	20
Exam	1.5

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

- Practical work: 33,3%
- Exam: 66,6%