



télécom
saint-étienne

école d'ingénieurs
nouvelles technologies

INTERNATIONAL
MASTER'S DEGREE

IMAGING TECHNOLOGIES FOR EXTENDED REALITY



École affiliée
IMT



UNIVERSITÉ
JEAN MONNET
SAINT-ÉTIENNE



MASTER

IMAGING TECHNOLOGIES FOR EXTENDED REALITY ABOUT ITXR

ITXR is a two-years Master track of the Master *Optic Image Visio Multimedia* (OIVM) of the Université Jean Monnet in Saint-Etienne. This curriculum is managed by Télécom Saint-Etienne. It provides an innovative approach combining imaging technologies and extended reality and aims to train highly skilled experts in:



Computational Imaging (image processing and computer vision)



Machine Learning (data analysis, machine and deep learning)



Computational Appearance (Light Matter Interaction and Materials Appearance: from physics to realtime 3D visualization)



XR technologies

ITXR is linked to:

- the ERASMUS MUNDUS – Partnership with Japan Master of Science Imaging and Light in Extended Reality (IMLEX)
- the ERASMUS MUNDUS joint Master degree in Photonics for Security Reliability and Safety (PSRS).

It shares, during the first year, several courses of these 2 programmes.

ITXR is part of the [MANUTECH SLEIGHT Graduate School](#) which provides an international integrated MSC/PhD program in the domain of Surfaces Light Engineering Health and Society. SLEIGHT is led by the [Hubert Curien laboratory](#), a joint research unit (UMR CNRS 5516) of the Jean Monnet University composed of about 240 members. The laboratory is structured into 6 teams: Micro/Nano structuring, Materials for Optics and Photonics in Extreme Radiative Environments, Laser-matter Interaction, Image Science & computer vision, Data Intelligence and Secure Embedded Systems & Hardware Architectures.



BECOME

Master ITXR opens up for international and challenging career opportunities, since on the international job market, the demand for postgraduates in computer vision, imaging science, machine learning, computer science and XR technologies as well as basic and applied research is very high.

Postgraduates will be qualified to work in any enterprise that uses digital media tools and systems, such as the imaging industry, the mobile industry, or the gaming industry.

Below, are some examples of future career prospects:

scientific advisor, chief scientist, R&D coordinator, research engineer, consultant, technical business development, manager/director, technology manager

The master programme also qualifies the postgraduate for PhD studies.

The Imaging Technologies for eXtended Reality master programme has four semesters over two years :
 Courses are taught in English and are structured according to the European Credit Transfer System with 120 credits over four semesters of full-time studies.



Semester 1: Fundamental courses in programming, imaging, data analysis and XR devices

Digital Image Processing and Analysis, Color and spectral imaging, Data analysis, Imaging sensors and XR devices, Introduction to Matlab, Algorithmic and Programming



Semester 2: Computational imaging

Real-time 3D Visualization, Real-time processing of Image with GPU, Complex Computer Rendering Methods in Real Time, Machine Learning: Fundamentals and Algorithms, Deep Learning and Computer Vision



Semester 3: Specializations and Research project

Implementation of extended reality applications, Material appearance in XR, Computer vision for XR, Lighting and visual perception in XR, Research project



Semester 4: Master Thesis

Students in this master’s program will benefit from the innovative equipments of the ITXR (Imaging and eXtended Reality) technological platform:

eXtended Reality

- workstations dedicated to virtual reality associated with multiple headsets: Oculus Quest 1 and 2 Oculus Rift and Rift S, HTC Vive, HP Reverb G2
- ZED Mini stereo camera for mixed reality
- Android tablets with ARCore
- Apple iPad with lidar sensor and ARKit
- ...

Cameras and Scanner 3D

- Color and Spectral cameras
- 360° cameras
- Event-based camera
- THz camera
- ZED stereo cameras
- GoPro cameras
- Azure Kinect camera
- Scanner 3D : EinScan H
- ...





MASTER

HOW TO APPLY

Diploma prerequisite:

BSc degree level (i.e. 180 ECTS) or equivalent, in physics, optics, imaging science, computer science or mathematics. International students have to hold a graduate diploma equivalent of a graduate level of 180 ECTS in the European system. The applicant is required to have a good background in computer science.

The ITRX application should be completed with all information requested. The application is to be submitted through our online application system at <https://international-sciencemasters.univ-st-etienne.fr/login>

Deadline:

- for non-EU applicants: 15/05/2021, 11.00pm (UTC time)
- for EU applicants: 15/06/2021, 11.00pm (UTC time)

Tuition fees:

The total cost for this program is 10 750€ , this total cost is funded as follows:

UJM grant: 10 000€

Student cost: 750 €

Join the 26,000 students of Saint-Etienne!

Located in the heart of the Auvergne Rhône-Alpes Region, Saint-Etienne benefits from an ideal geographical location. Here, you enter and leave the city with great ease, to change air according to your desires!
You reach Paris in only 2h40 by TGV, Lyon in 40 minutes by train and many highways lead you to the sun, the mountains or even abroad.



MASTER ITRX

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