Erasmus Mundus Japan - Master of Science in Imaging and Light in Extended Reality – IMLEX, Joensuu campus

IMLEX programme provides a multidisciplinary and innovative approach combining Imaging, Lighting and Information Technology. The objective is to educate students in advanced technologies, methodologies and practical applications. Students will develop professional and social skills useful in both European and Japanese cultural context. Graduates will have competences in: Extended reality (XR): Augmented, Mixed and Virtual Reality (AR, MR, VR); industrial environments with robots and complex elements; Imaging; Rendering; Lighting.

IMLEX study programme is divided in two study tracks: *Lighting* track and *Computational Imaging* Track. All students will be appointed their study track during the admission process.

The IMLEX mobility plan is as follows:

Semester 1: UEF

Semester 2: University Jean Monnet (France) or KU Leuven (Belgium)

Semester 3: Toyohashi University of Technology (Japan)

Semester 4: MSc thesis, in one of the partner universities or in a partner company

Semester 1, UEF:

Core courses for all students	**ECTS credits**
Photonics and Optics Fundamentals	4
Design and Analysis of Algorithms	4
Robotics and XR	4
Physical Optics	4
Eye Tracking	4
English or Japanese or national language course	2

Track specific courses, semester 1

Lighting track	**ECTS credits**	**Computational Imaging track**	**ECTS credits**
Mathematical Methods for Photonics	4	Color Science	4
Applications of Photonics	4	Advanced Spectral Imaging	4

Semester 2, KU Leuven / University Jean Monnet:

Lighting track, KU Leuven

Core courses	ECTS credits
Lighting Science	6
Lighting Technology	6
Lighting Metrology	3
Lighting Design	6
Lighting Business	6
English or Japanese or national language course	3

Computational Imaging track, University Jean Monnet

Core courses	ECTS credits
Real-time 3D Visualization	5
Real-time processing of Conventional/Non-Conventional Image with GPU	5
Complex Computer Rendering Methods in Real Time	6
Machine Learning: Fundamentals and Algorithms	5
Deep Learning and Computer Vision	6
English or Japanese or national language course	3

Semester 3, Toyohashi University of Technology:

Track specific courses, semester 3

Lighting track	ECTS credits	Computational Imaging track	ECTS credits
Human Sensation & Perception	4	3D Vision Computation	4
X Reality and Psychology	4	Robotic Perception and Human-robot Interaction	4

Core courses for all students, semester 3	ECTS credits
Data Science and Analysis	4
Advanced Research Methods	6
Japanese Culture and Society	4
Case Study in Imaging and Light and XR	6
Japanese Industrial Technologies and Innovations	2

Semester 4, Master's Thesis, 30 ECTS credits