

PhotonHub Demo Centre

Course 01

Super resolution and advance microscopy imaging techniques

29/10/2025

Course Provider

ICFO

Barcelona, Spain

Course Overview

Advanced microscopy and super resolution imaging techniques are becoming essential tools for non-invasive observation of samples at scales that go from several nm to the mm scale. Applications go from agriculture and food industry, materials, diagnosis of diseases, understanding of cellular and subcellular dynamic processes to study of embryo development, etc.

This 1-day course provides ad-hoc basic training on super resolution and advanced microscopy imaging techniques including STED, STORM, Confocal, spectral confocal and fluorescence lifetime imaging microscopy.

The course includes a basic overview of the main concepts involved in each technique, and hands-on sessions. In these, the trainee will have the opportunity to acquire images from different test samples which will be provided according to the technique and microscope in use.

This unique 'hands-on' training program provides attendees with access to state-of-the-art facilities, materials and equipment, with dedicated tutorials and mentoring from technical experts.

Target Audience

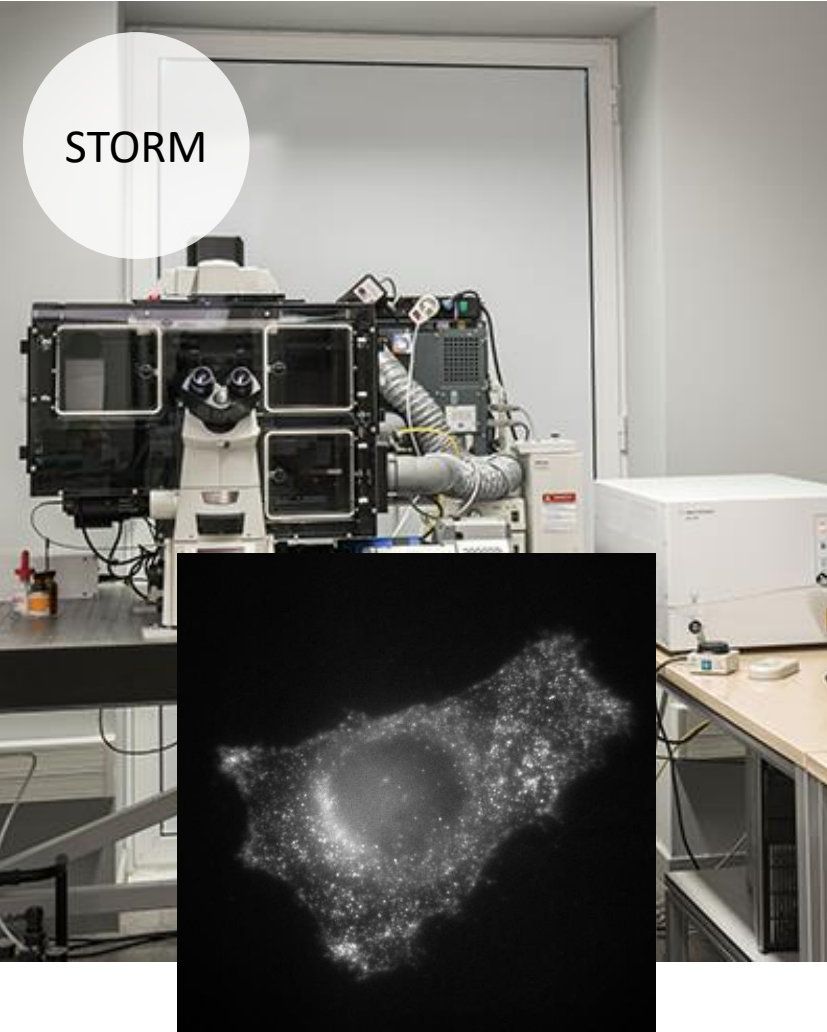
It is desirable but not essential that course attendees have a basic understanding of optics and photonics. The course is at an “entry level” for those interested in modern microscopy techniques. Depending on the attendees, the course can be tailored to match their needs and backgrounds.

Expected Outcomes

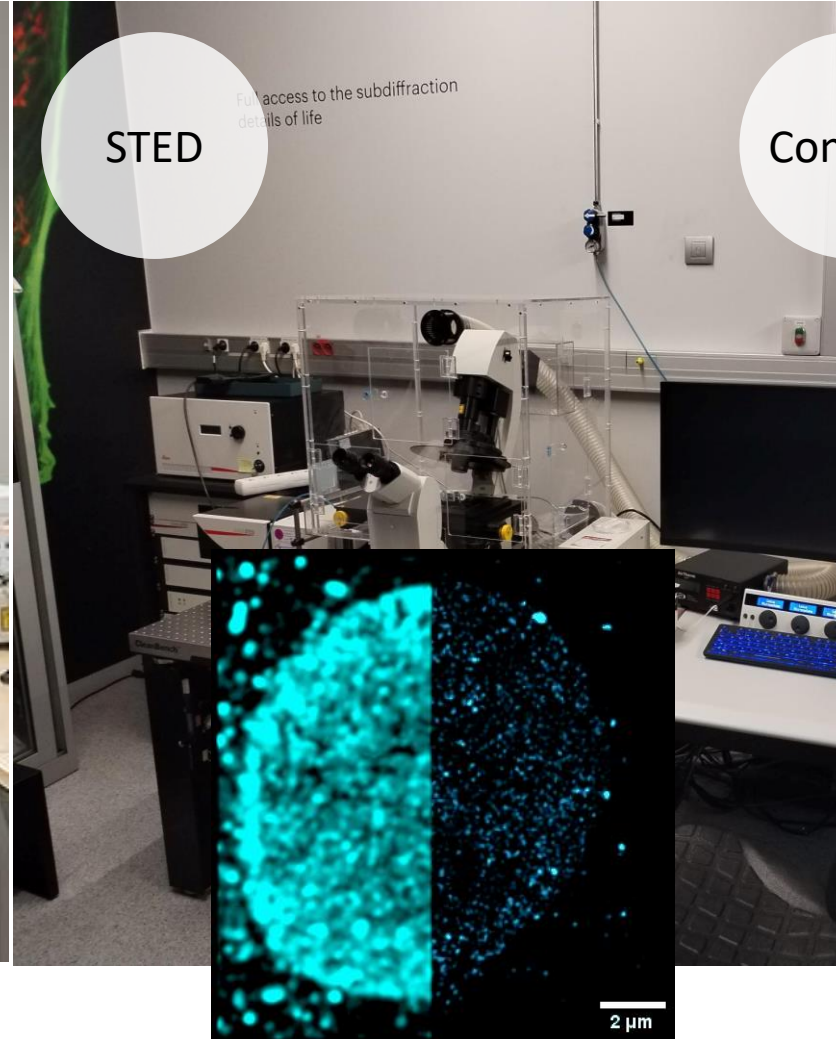
- 1) Understanding the key features of modern microscopy
- 2) Familiarize with the different concepts of super resolution
- 3) Devising an imaging experiment from sample preparation to image quantification on 3 of the available technologies (according to the attendees preferences)

Course Equipment & Infrastructure

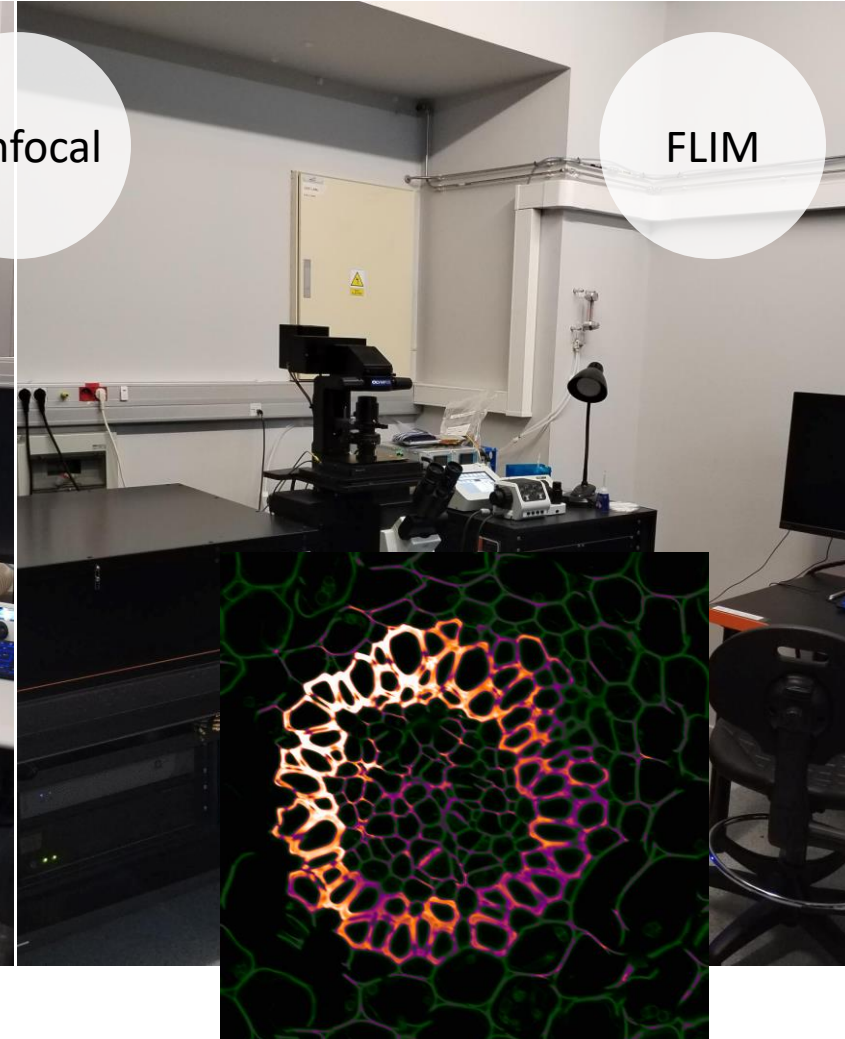
STORM



STED



Confocal



FLIM

Course Schedule (Demo) – Option 2

9:00-10am	1h Lunch break
LECTURE (1hr)	14:30-16:15
Introduction to advance imaging techniques: Concepts and examples	G1: MT3
	G2: MT1
	15' Coffee break
	16:30-18:15
	G1: MT1
	G2: MT2
30' Coffee break	
10:30-12:00	
G1: MT2	
G2: MT4	
12:00-13:30	
G1: MT4	
G2: MT2	

G: Group number.
4/5 persons/group

Microscopy techniques (MT) that can be offered for training

- Confocal (MT1)
- STED (MT2)
- STORM (MT3)
- FLIM (MT4)

Hands-ON sessions: 1:30 to 1:45h hrs

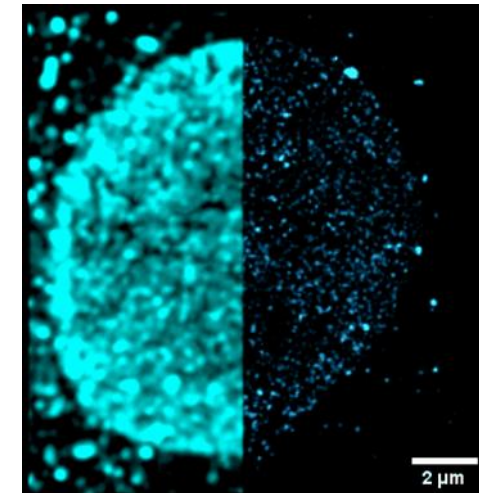
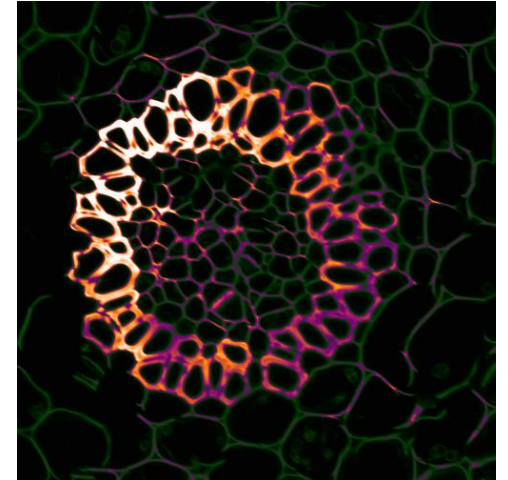
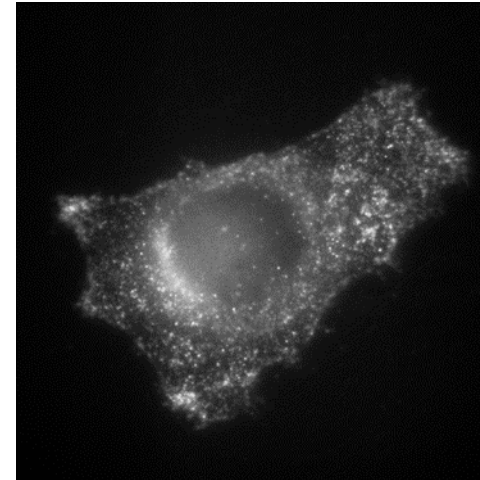
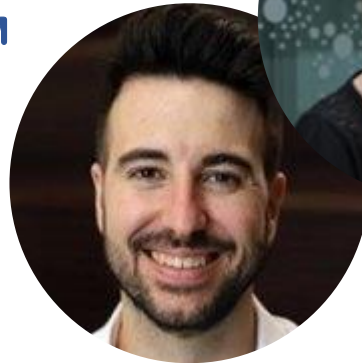
Course Trainers

Course Director: Dr. Pablo Loza-Alvarez

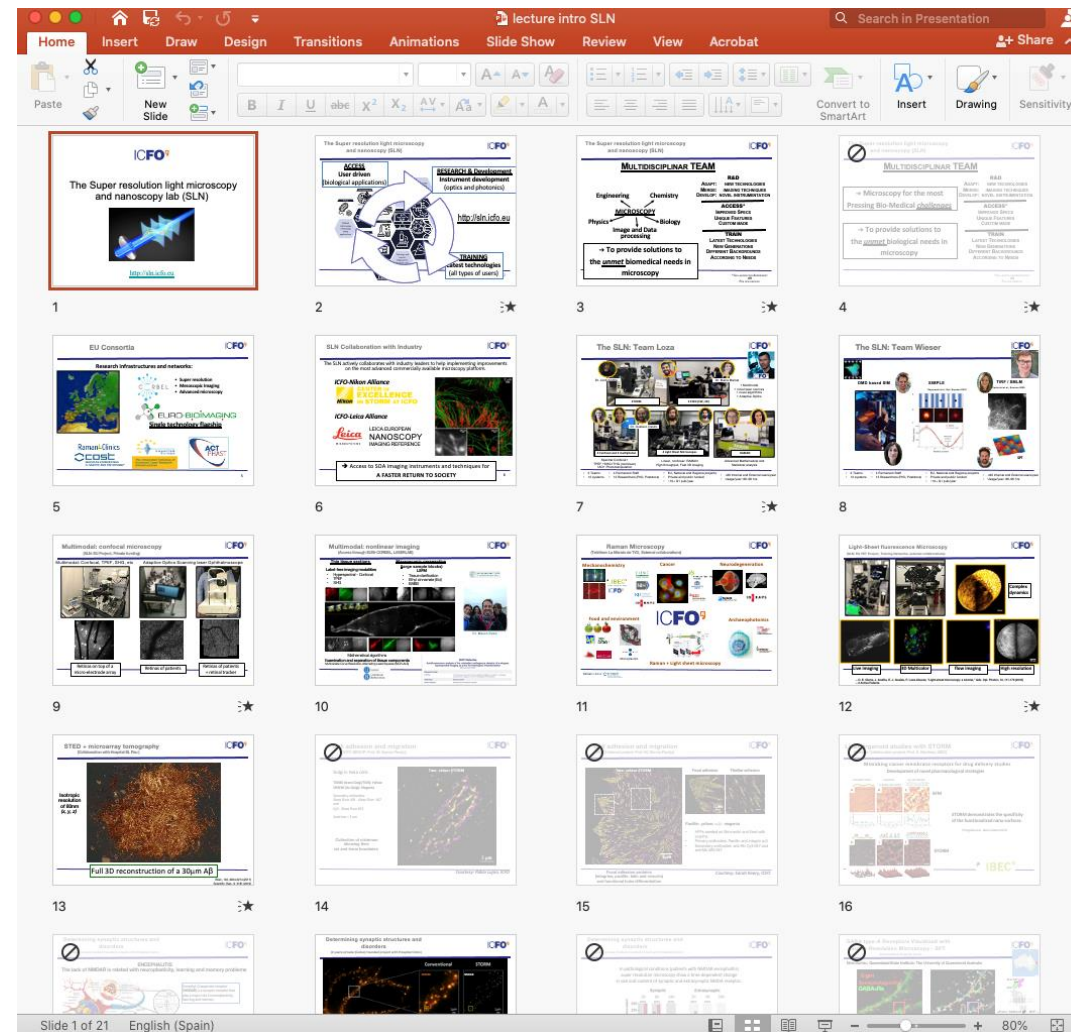
Dr. Pablo Loza-Alvarez : Lecture

Dr. María Marsal : STED, confocal

Dr. Nicolás Mateos: STORM, FLIM



Course Material (power point presentation)



Course Location, Schedule & Cost



Course Schedule 29/10/2025

Number of people (groups of 9 - 12 people per course)

Course Cost (250 Euros per person, includes catering and project consumables)

Further Information

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www.photonhub.eu/euphotonicsacademy

Keywords

Microscopy, biology, medicine, super resolution, biomedicine, fluorescence, confocal, spectral imaging, STED, FLIM