



# CONFOCAL MICROSCOPY

## COURSE CONTENT

**Intro to Confocal microscopy**

**Fundamentals of optical imaging**

Magnification, resolution, PSF and convolution

**From extended illumination to scanning illumination**

**Confocality: the role of the pinhole**

**Contrast and Resolution in confocal microscopy**

**The optical slicing (Z-stack)**

**Anatomy of a confocal microscope:**

Light source

Scanning mechanisms

Detectors

The image collection process

**Alternative configurations**

Spinning disk

Multiphoton excitation

**Image reconstruction and deconvolution**

## PRATICAL SESSION

*Measuring the 3D PSF with fluorescent beads*

*Setting the correct exposition/integration time/sensitivity of the detector*

*Fluorescence excitation/detection at multiple wavelengths*

*Spatial sampling and the Nyquist theorem. The issue of photobleaching.*

*Optical slicing and 3D reconstruction*

*Image Deconvolution*