

## Introductions – Microscopy

The introduction to microscopy consists of 3 modules taking place on consecutive days.

Each block will take 2-2.5h



### Day1 - Fundamental concepts of Microscopy

1. Fundamentals of light microscopy: Optical components, numerical aperture and image planes
2. Light paths and geometrical optics: Image formation, reflection and refraction, optical aberrations
3. Diffraction and interference: Abbes diffraction limit and Rayleigh criterion
4. Spatial resolution

### Day2 - Optical Sectioning

1. Fluorescence
2. Optical sectioning by point-scanning confocal and spinning disk microscopy
3. Airyscan Microscopy
4. Two-photon Microscopy
5. Lightsheet Microscopy
6. TIRF (total internal reflection microscopy)
7. Structured Illumination

### Day 3 - Basics of FIJI: what can be done with acquired data

1. Properties and problems of digital images
2. Installation and update procedures in Fiji, starting macros and plugins
3. Open/import/export images
4. Change Image appearance: brightness/contrast, LUT, image size
5. Image handling (ROIs, stacks, properties, calibration, etc.)
6. Channels Tool: split/join/merge channels
7. Thresholding and segmentation
8. Measurements