

2015	
16.03	Introduction, cameras and detectors
09:00-09:45	Welcome
09:45-10:20	Types of light microscope systems
10:30-12:00	Camera and PMT properties How to select the correct camera for your application
13:00-14:00	Student presentations: imaging challenge (group 1 and 2)
14:15-15:15	workshops
15:30-16:30	workshops
16:30-17:00	answer exam questions
17.03	Sample preparation and avoiding bleedthrough
9:00-10:00	The different types of carriers by Corning The different types of mounting media (hardware autofocus) how to seed cells to get even distribution
10:00-10:20	How to clean the objectives and the samples. Objective coatings are fragile how to fix, stain, DAPI and Hoechst
10:30-12:00	Matching fluorophores and filters spectra how to identify and avoid bleedthrough Sequential vs simultaneous imaging vs Spectral detectors, virtual filters and unmixing
13:00-14:00	Student presentations: imaging challenge (group 3 and 4)
14:15-15:15	workshops
15:30-16:30	workshops
16:30-17:00	answer exam questions
18.03	Objectives, resolution and contrast
09:00-09:50	Specifications of objectives: magnification, WD, NA, ring, immersion, brightness, xyz resolution, depth of field Which objective for which application? How to care for the objectives? comments about exam questions from previous days
10:00-12:00	Resolution and contrast Aberrations and diffraction Point Spread Function Confocal aperture size Airy unit, Rayleigh criterion, Abbe's limit and MTF curves What is the Nyquist sampling theory and how to use it. scanning density
13:00-14:00	High throughput yeast imaging
14:15-15:15	workshops
15:30-16:30	workshops
homework	answer exam questions about objectives, resolution and contrast
19.03	Confocal settings and Fluorophores
9:00-10:20	spherical aberrations typical workflow of how to set a confocal: question, objective, sequential or simultaneous, scan area, pixel density, laser power When do we care about resolution? Saturation, underexposure, bit depth and fluorophore saturation. show tomas figure to demo wrong offset comments about exam questions from previous days
10:30-12:00	What is light? What is fluorescence: excitation, emission and lifetime? The different types of fluorophores Fluorophore specifications (quantum yield, brightness...) and how to judge what a good fluorophore is Fluorophore saturation
13:00-14:00	Colocalization
14:15-15:15	workshops
15:30-16:30	workshops
homework	answer exam questions about objectives, resolution and contrast
20.03	xyz automation and fast imaging
9:00-10:20	Large image/overview/filing How to find the area of interest in a large sample with minimum bleaching Hardware versus software autofocus, focus surface Options for fast imaging
10:30-11:15	Stereology by Visiopharm
11:15-12:00	presentation of literature studies group 3 and 4
13:00-14:00	FRAP
14:15-15:15	workshops
15:30-16:30	workshops
23.03	Volume imaging
9:00-10:20	The problem of imaging a fluorescent volume: Refractive index matching and scale distortion introduction to 2P: Widefield vs confocal vs multiphoton including NDDs, clearing Two photon microscopy theory, practice, advantages and limitations. Intravital imaging. SHG, THG
10:30-11:15	In vivo imaging of pancreatic beta cell mass and function
11:15-12:00	Light sheet microscopy and Airyscan by Zeiss
13:00-14:00	workshops
14:15-15:15	workshops
15:30-16:30	workshops
24.03	Special applications, trends and challenges in light microscopy
9:00-10:20	Imaging live cells: how to assess the cell's health, how to prevent light toxicity Special applications: TIRF, Super resolution Trends and future challenges in light microscopy comments about exam questions from previous days
10:30-11:15	PLA
11:15-12:00	FRET and FLIM
13:00-13:15	comments about exam questions from previous days
13:15-14:00	presentation of literature studies group 1 and 2
14:15-15:15	workshops
15:30-16:30	workshops
25.03	Data handling, data management, statistics
09:00-10:00	awareness about potential problems in image processing recommendations by major scientific journals about modifying images for publication
10:10-12:00	the different image formats clarifying or manipulating? the safe way of saving images and backing them up how to format images for publishing or poster printing
13:00-14:00	statistics in imaging
14:15-15:15	workshops
15:30-16:30	workshops
26.03	Image processing and quantitative analysis
09:00-09:30	quick presentation of imagej. microscopy wiki websites, Omero Analysis strategy and what to think about before you start imaging
09:30-10:30	Cell Profiler. Students work as pairs
10:40-12:00	Cell Profiler. Students work as pairs
13:00-15:00	Image processing workshop for all groups. Students work as pairs
15:15-17:00	Image processing workshop for all groups. Students work as pairs
27.03	Minisymposium: Innovation through advanced microscopy- examination
9:30-10:15	Nobel Prize superresolved fluorescence microscopy
10:15-11:00	Innovation through advanced microscopy
11:00-12:00	Examination
13:00-13:15	Conclusion and feedback