

Live Cell Imaging Facility Microscopy course 26 Jan- 12 Feb 2021

Schedule subject to last minute changes. Always check the latest update on this page.

Activity code

Code 1 (Blue): Lectures and demos, public and broadcasted, no registration needed (see link and instructions on our website)

	When	Who	Code	What
	Before			Assignments
Week 1	Tues 26/01			Optics, image formation, fluorescence, fluorophores, microscope and microscopy types
	09:00-09:30		2	Welcome and introduction, Virtual tour of the facility
	09:30-10:20	Sylvie Le Guyader	1	Lecture: Nature of light, basic optics for microscopy, image formation
	10:30-11:00	Sylvie Le Guyader	1	Lecture: Fluorescence and fluorophores
	11:00-12:15	Sylvie Le Guyader	1	Workshop: Bleedthrough assessment
	13:15-14:45	Sylvie Le Guyader	1	Lecture: Anatomy of a microscope
	15:00-16:30	Sylvie Le Guyader	2	Workshop: The art of bleaching the sample
	16:30-17:10		2	2 Student imaging challenge presentations
	Wed 27/01			Objectives and refraction index, Cameras and detectors
	09:00-10:00		2	3 Student imaging challenge presentations
	10:10-12:00	Sylvie Le Guyader	1	Lecture: Objectives, PSF and resolution, Refraction index mismatch and scale distortion
	13:00-17:00	Sylvie Le Guyader	2	Workshop: Anatomy of a microscope, Part 1
	Thurs 28/01			Noise and background, Cameras and detectors, Bit depth and saturation, Multicolour imaging
	09:00-10:00		2	Workshop: Student imaging challenge
Week 2	10:10-11:10	Sylvie Le Guyader	1	Lecture: Sensors
	11:10-12:10	Sylvie Le Guyader	1	Lecture: Signal, background and noise
	13:00-13:30	Sylvie Le Guyader	1	Lecture: Bit depth and saturation video and lecture. Care of the objectives
	13:30-14:30	Gabriela Imreh	1	Lecture: Filter-based vs spectral imaging. Linear unmixing
	14:45-16:30		2	Discussion and quiz Week 1
	16:30-17:00		2	Wrapping up Week 1
	Fri 29/01		2	Workshop: Student imaging challenge
	Friday-Monday			Assignments
	Mon 01/02		2	Workshop: Student imaging challenge
	Tues 02/02			Resolution and contrast, Sample preparation, Immunostaining
	09:00-10:00		2	3 Student imaging challenge presentations
	10:10-12:10	Anna Burvall	1	Lecture: Resolution, contrast, point spread function, Airy, Rayleigh, Abbe, Nyquist and MTF curves
	13:00-14:00	Gabriela Imreh	1	Lecture: Sample preparation tips
	14:00-15:00	Gabriela Imreh	1	Lecture: Immunostaining troubleshooting
	15:15-16:15	Oliver Garner/Marie Andersson	2	Workshop: Camera
	16:15-17:15	Gabriela Imreh	2	Workshop: Filter-based vs spectral imaging and linear unmixing
Week 3	Wed 03/02			Nyquist sampling, Confocal and wide field settings, Scaling up and speeding up, High throughput/content
	09:00-10:00		2	3 Student imaging challenge presentations
	10:10-11:10	Sylvie Le Guyader	1	Lecture: Bridging concepts: resolution, contrast, objectives, sampling rate + quiz
	11:10-12:10	Sylvie Le Guyader	1	Lecture: Setting parameters on confocal and widefield systems
	13:00-14:30	Sylvie Le Guyader	1	Lecture: Scaling up and speeding up imaging: xyz automation, autofocus, fast imaging
	14:30-15:00	Victoria Menendez Benito	1	Lecture: High throughput/content imaging
	15:15-17:15		2	Discussion and quiz Week 2
	Thurs 04/02			Volume imaging, deconvolution, multiphoton, Clearing and expansion
	09:00-10:00		2	3 Student imaging challenge presentations
	10:10-11:10	Sylvie Le Guyader	1	Lecture: Volume imaging, Deconvolution, Multiphoton, Adaptive Optics
	11:10-11:40	David Unnersjö-Jess	1	Lecture: Clearing and expansion microscopy
	11:40-12:10		2	Assignment discussion and quiz
	13:00-14:00	Tobias Nyberg	2	Workshop: High speed imaging
	14:00-15:00	Gabriela Imreh	2	Workshop: Widefield vs confocal
	15:15-17:00	Tobias Nyberg	2	Workshop: Objectives and Refraction Index
	17:00-17:15		2	Wrapping up Week 2
Week 3	Fri 05/02		2	Workshop: Student imaging challenge
	Friday-Monday			Assignments
	Mon 08/02		2	Workshop: Student imaging challenge
	Tues 09/02			Live cell imaging, Fourier, AI, Super Resolution microscopy
	09:00-10:00		2	3 Student imaging challenge presentations
	10:10-11:10	Gabriela Imreh	1	Lecture: Live cell imaging, label free imaging
	11:10-11:40	Sylvie Le Guyader	1	Lecture: Introduction to Fourier space and Fourier transforms
	11:40-12:10	Simone Lepper	1	Lecture: Artificial Intelligence in microscopy images
	13:00-14:00	Hans Blom	1	Lecture: Introduction to superresolution microscopy: STED, STORM, SIM, AiryScan, Rescan, DNA Paint
	14:00-15:00	Sylvie Le Guyader	2	Workshop: Multiphoton microscopy
	15:15-16:15	Sylvie Le Guyader	2	Workshop: Light sheet
	16:15-17:15	Sylvie Le Guyader	2	Quiz, Discussion about Assignments week 2 and Changing your imaging settings assignments
	Wed 10/02			Data handling, OMERO.figure, Requirements for image analysis, Colocalization
	09:00-10:00	Sylvie Le Guyader	1	Lecture: How to deal with images for publications, image formats, image/data management
	10:10-11:10	Gisele Miranda	1	Lecture: Sample and microscopy requirements for image analysis
	11:10-12:10	Petr Walczysko	1	Demo: How to easily make figures for publication with OMERO.Figure
	13:00-14:00	Jeremy Adler	1	Lecture: Colocalization
	14:00-15:00	Marie Andersson	2	Workshop: STORM
	15:15-16:45		2	Quiz and discussion - Week 3
	16:45-17:00		2	Wrapping up Week 3
	Thurs 11/02			Image processing and analysis
	09:00-10:00		2	Questions, conclusion and feedback for lectures and workshops
	10:10-12:10	Gisele Miranda	2	Workshop: Image analysis
	13:00-15:00	Gisele Miranda	2	Workshop: Image analysis
	Fri 12/02			Examination
	10:00-12:00			Examination
	After			Assignments