

# Live Cell Imaging Facility Microscopy course 24 Jan- 11 Feb 2022

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

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

	When	Who	What	
	<b>Before</b>		<b>Assignments</b>	
<b>Week 1</b>	<b>Tues 25/01</b> 09:00-09:30		<b>Optics, image formation, fluorescence, fluorophores, microscope and microscopy types</b> Welcome and introduction, Virtual tour of the facility	
	09:30-10:20	Sylvie Le Guyader	Lecture: Nature of light, basic optics for microscopy, image formation	
	10:30-11:00	Sylvie Le Guyader	Lecture: Fluorescence and fluorophores	
	11:00-12:15	Sylvie Le Guyader	Workshop: Bleedthrough assessment	
	13:15-14:45	Sylvie Le Guyader	Lecture: Anatomy of a microscope	
15:00-16:30	Sylvie Le Guyader	Workshop: The art of bleaching the sample		
16:30-17:10	Sylvie Le Guyader	2 Student imaging challenge presentations		
<b>Wed 26/01</b> 09:00-10:00			<b>Objectives and refraction index, Cameras and detectors</b> 3 Student imaging challenge presentations	
10:10-12:00	Sylvie Le Guyader		Lecture: Objectives, PSF and resolution, Refraction index mismatch and scale distortion	
13:00-17:00	Sylvie Le Guyader		Workshop: Anatomy of a microscope, Part 1	
<b>Thurs 27/01</b> 09:00-10:00			<b>Noise and background, Cameras and detectors, Bit depth and saturation, Multicolour imaging</b> Workshop: Student imaging challenge	
10:10-11:10	Sylvie Le Guyader		Lecture: Sensors	
11:10-12:10	Sylvie Le Guyader		Lecture: Signal, background and noise	
13:00-13:30	Sylvie Le Guyader		Lecture: Bit depth and saturation video and lecture. Care of the objectives	
13:30-14:30	Gabriela Imreh		Lecture: Filter-based vs spectral imaging. Linear unmixing	
14:45-16:30			Discussion and quiz Week 1	
16:30-17:00			Wrapping up Week 1	
<b>Fri 28/01</b>			Workshop: Student imaging challenge	
<b>Friday-Monday</b>			<b>Assignments</b>	
<b>Mon 31/01</b>			Workshop: Student imaging challenge	
<b>Week 2</b>	<b>Tues 01/02</b> 09:00-10:00		<b>Resolution and contrast, Sample preparation, Immunostaining</b> 3 Student imaging challenge presentations	
	10:10-12:10	Anna Burvall	Lecture: Resolution, contrast, point spread function, Airy, Rayleigh, Abbe, Nyquist and MTF curves	
	13:00-14:00	Gabriela Imreh	Lecture: Sample preparation tips	
	14:00-15:00	Gabriela Imreh	Lecture: Immunostaining troubleshooting	
	15:15-16:15	Oliver Garner/Marie Andersson	Workshop: Camera	
	16:15-17:15	Gabriela Imreh	Workshop: Filter-based vs spectral imaging and linear unmixing	
	<b>Wed 02/02</b> 09:00-10:00			<b>Nyquist sampling, Confocal and wide field settings, Scaling up and speeding up, High throughput/content</b> 3 Student imaging challenge presentations
	10:10-11:10	Sylvie Le Guyader		Lecture: Bridging concepts: resolution, contrast, objectives, sampling rate + quiz
	11:10-12:10	Sylvie Le Guyader		Lecture: Setting parameters on confocal and widefield systems
	13:00-14:30	Sylvie Le Guyader		Lecture: Scaling up and speeding up imaging: xyz automation, autofocus, fast imaging
	14:30-15:00	Victoria Menendez Benito		Lecture: High throughput/content imaging
	15:15-17:15			Discussion and quiz Week 2
	<b>Thurs 03/02</b> 09:00-10:00			<b>Volume imaging, deconvolution, multiphoton, Clearing and expansion</b> 3 Student imaging challenge presentations
10:10-11:10	Sylvie Le Guyader		Lecture: Volume imaging, Deconvolution, Multiphoton, Adaptive Optics	
11:10-11:40	David Unnersjö-Jess		Lecture: Clearing and expansion microscopy	
11:40-12:10			Assignment discussion and quiz	
13:00-14:00	Tobias Nyberg		Workshop: High speed imaging	
14:00-15:00	Gabriela Imreh		Workshop: Widefield vs confocal	
15:15-17:00	Tobias Nyberg		Workshop: Objectives and Refraction Index	
17:00-17:15			Wrapping up Week 2	
<b>Fri 04/02</b>			Workshop: Student imaging challenge	
<b>Friday-Monday</b>			<b>Assignments</b>	
<b>Mon 07/02</b>			Workshop: Student imaging challenge	
<b>Week 3</b>	<b>Tues 09/02</b> 09:00-10:00		<b>Live cell imaging, Fourier, AI, Super Resolution microscopy</b> 3 Student imaging challenge presentations	
	10:10-11:10	Gabriela Imreh	Lecture: Live cell imaging, label free imaging	
	11:10-11:40	Sylvie Le Guyader	Lecture: Introduction to Fourier space and Fourier transforms	
	11:40-12:10	Simone Lepper	Lecture: Artificial Intelligence in microscopy images	
	13:00-14:00	Hans Blom	Lecture: Introduction to superresolution microscopy: STED, STORM, SIM, AiryScan, Rescan, DNA Paint	
	14:00-15:00	Sylvie Le Guyader	Workshop: Multiphoton microscopy	
	15:15-16:15	Sylvie Le Guyader	Workshop: Light sheet	
	16:15-17:15	Sylvie Le Guyader	Quiz, Discussion about Assignments week 2 and Changing your imaging settings assignments	
	<b>Wed 10/02</b> 09:00-10:00			<b>Data handling, OMERO.figure, Requirements for image analysis, Colocalization</b> Lecture: How to deal with images for publications, image formats, image/data management
	10:10-11:10	Gisele Miranda		Lecture: Sample and microscopy requirements for image analysis
	11:10-12:10	Petr Walczysko		Demo: How to easily make figures for publication with OMERO.Figure
	13:00-14:00	Jeremy Adler		Lecture: Colocalization
	14:00-15:00	Marie Andersson		Workshop: STORM
15:15-16:45			Quiz and discussion - Week 3	
16:45-17:00			Wrapping up Week 3	
<b>Thurs 11/02</b> 09:00-10:00			<b>Image processing and analysis</b> Questions, conclusion and feedback for lectures and workshops	
10:10-12:10	Gisele Miranda		Workshop: Image analysis	
13:00-15:00	Gisele Miranda		Workshop: Image analysis	
<b>Fri 12/02</b> 10:00-12:00			<b>Examination</b> Examination	
<b>After</b>			<b>Assignments</b>	