

The Live Cell Imaging Facility Microscopy course 29 Jan- 16 Feb 2024

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

In Blue: Lectures and demos that are publicly broadcasted, no registration needed (use Zoom link on the LCI website)

	When	Who	What
Week 1	Mon 29/01 09:00-09:20 09:20-10:35 10:35-11:00 11:00-12:15 12:15-13:15 13:15-14:30 14:30-15:30 15:30-16:45 16:45-17:10 17:10-17:15		Module 1: Student Imaging Challenge Presentations Introduction Student Imaging Challenge Presentations, Group 1 <i>Break and book group time</i> Student Imaging Challenge Presentations, Group 2 <i>Lunch and Ibidi display</i> Student Imaging Challenge Presentations, Group 3 <i>Break and guided tour of the LCI core facility</i> Student Imaging Challenge Presentations, Group 4 Group discussion: Student Imaging Challenge Questions
	Tues 30/01 09:00-09:10 09:10-09:15 09:15-09:45 10:00-10:25 10:25-10:45 10:45-11:00 11:00-11:30 11:30-12:00 13:00-15:00 15:15-15:40 15:40-16:55 16:55-17:10 17:10-17:15	Sylvie Le Guyader Sylvie Le Guyader Sylvie Le Guyader Sylvie Le Guyader Sylvie Le Guyader Sylvie Le Guyader Sylvie Le Guyader Sylvie Le Guyader	Module 2: Working with light and fluorophores Feedback, questions, ILOs and portfolio Lecture: Key concepts of light microscopy Lecture: Nature of light Lecture: Basic optics for light microscopy Lecture: Image formation Lecture: Key concepts of light microscopy Group quizzes: Basic optics and Image formation Group quizzes: Assessment of imaging efficiency and bleedthrough Workshop: Assessment of imaging efficiency and bleedthrough Lecture: Fluorescence and fluorophores Group quizzes: Fluorescence and fluorophores Group quiz: Assessing bleedthrough in already acquired images Questions
	Wed 31/01 09:00-09:10 09:10-10:10 10:10-10:20 10:30-11:10 11:10-11:25 11:25-12:00 13:15-14:15 14:30-16:30 16:30-17:10 17:10-17:15	Sylvie Le Guyader Sylvie Le Guyader Sylvie Le Guyader Sylvie Le Guyader Sylvie Le Guyader	Module 3: Anatomy of a microscope Feedback, questions, ILOs and portfolio Lecture: Anatomy of a microscope: architecture, transmitted light versus fluorescence Quizzes Lecture: Anatomy of a microscope: wide field and single point confocals Quizzes Lecture: Anatomy of a microscope: multipoint confocals and light sheet systems Workshop: Anatomy of a microscope: video and survey demo Workshop: Anatomy of a microscope Quizzes Questions
	Thurs 01/02 09:00-09:10 09:10-10:10 10:20-11:20 11:20-11:40 11:40-12:00 13:00-13:25 13:25-14:40 14:55-15:30 15:30-16:00 16:00-17:10 17:10-17:15	Sylvie Le Guyader Sylvie Le Guyader Sylvie Le Guyader Jianjiang Hu Sylvie Le Guyader	Module 4: Working with objectives Feedback, questions, ILOs and portfolio Lecture: Objectives Group discussion: Choose the best objective for your experiment Lecture: Point Spread Function and resolution Quiz: Objectives, PSF and resolution Lecture: Refraction index mismatch and optical aberrations Workshop: Objectives and Refraction Index mismatch Lecture: Efficient strategies to find the area of interest: large FOV, tiling and autofocus Group discussion: Focus strategy Group discussion and quizzes Questions
	Fri 02/02		Assignments, Student Imaging Challenge Workshop
	Mon 05/02		Assignments, Student Imaging Challenge Workshop
	Tues 06/02 09:00-09:20 09:20-09:35 09:35-10:05 10:15-11:30 11:30-12:00 13:00-14:30 14:45-15:30 15:30-16:30 16:30-16:45 16:45-17:10 17:10-17:15	Sylvie Le Guyader Gabriela Imreh Gabriela Imreh David Unnersjö-Jess Sylvie Le Guyader	Module 5: Sample preparation Feedback, questions, ILOs and portfolio Discussion about the video Preparing and imaging live samples Teacher Imaging Challenge: What did I see in your samples this week? Lecture: Sample preparation tips Group discussion: How can you improve your sample preparation? Lecture: Immunostaining troubleshooting Lecture: Clearing and expansion microscopy Workshop: The art of bleaching the sample Group discussion: The perfect sample Quizzes Questions
	Wed 07/02 09:00-09:10		Module 6: The digital image Feedback, questions, ILOs and portfolio

Week 2	09:10-10:00	Sylvie Le Guyader	Lecture: Bridging concepts: Optical resolution, contrast and sampling
	10:10-11:10	Sylvie Le Guyader	Lecture: Bridging concepts: Optical resolution, contrast and sampling
	11:10-11:20		Group discussion: What is the pixel size in your images?
	11:20-12:00		Group discussion: Does the pixel size in your image fulfil the Nyquist theorem?
	13:00-13:15	Sylvie Le Guyader	Lecture: Sensors
	13:15-14:00	Sylvie Le Guyader	Lecture: Signal, background and noise
	14:00-15:00	Sylvie Le Guyader	Group discussion: The signal to background (SBR) in your images
	15:15-16:15		Group quizzes
	16:15-16:20		Questions
	Thurs 08/02		Module 7: Capturing light
09:00-09:10		Feedback, questions, ILOs and portfolio	
09:10-09:50	Gabriela Imreh	Lecture: Imaging multiple colours at once	
09:50-10:10		Group quizzes	
10:20-12:00	Sylvie Le Guyader	Lecture: Saturation, under exposure, bit depth, dynamic range and image display	
13:00-13:35	Sylvie Le Guyader	Lecture: Workflow to set parameters on detector- and camera-based systems	
13:35-14:00		Group discussion: Choosing the imaging settings on your microscope	
14:00-14:45	Marie Andersson	Workshop: Camera	
14:45-15:00		Group quizzes	
15:15-16:00		Group discussion: Relationship between image analysis strategy and the scientific question	
16:00-17:10		Group quizzes	
17:10-17:15		Questions	
Fri 09/02		Assignments, Student Imaging Challenge Workshop	
Week 3	Mon 12/02		Assignments, Student Imaging Challenge Workshop
	Tues 13/02		Module 8: Off the beaten track
	09:00-09:20		Feedback, questions, ILOs and portfolio
	09:20-10:00		Peer review of images acquired at Nyquist sampling
	10:00-10:30	Victoria Menendez Benito	Lecture: High throughput/content imaging
	10:40-12:00	Hans Blom	Lecture: Introduction to super resolution microscopy
	13:00-13:15	Erik Wernersson	Lecture: Introduction to deconvolution
	13:15-14:00	Erik Wernersson	Group assignment: Test 2D and 3D deconvolution
	14:00-14:30	Andrii Rogov	Lecture: Artificial Intelligence in light microscopy
	14:30-15:00		Teacher Imaging Challenge: What did I see in your samples this week?
	15:15-15:45		Group quizzes
	15:45-16:30	Jeremy Adler	Lecture: Colocalization
	16:30-17:10		Workshop: Colocalization
	17:10-17:15		Questions
	Wed 14/02		Module 9: Publishing images
	09:30-09:40		Feedback, questions, ILOs and portfolio
	09:40-10:00	Sylvie Le Guyader	Lecture: Introduction to Fourier transforms
10:10-12:10	Petr Walczysko	Workshop: How to easily make figures for publication with OMERO.figure	
13:10-14:10	Sylvie Le Guyader	Lecture: Publishing images	
14:10-15:00		Group discussion: Reverse-thinking your experiment	
15:15-16:15	Douglas Cromeey	Lecture: Ethics in imaging	
16:15-16:30		Questions	
Thurs 15/02		Module 10: Image analysis	
09:00-09:10		Feedback, questions, ILOs and portfolio	
09:10-10:10	Gisele Miranda	Lecture: Introduction to Bioimage analysis	
10:20-12:20	G. Miranda/E. Ylipää/E. Balsever	Workshop: Image analysis	
13:20-15:20	G. Miranda/E. Ylipää/E. Balsever	Workshop: Image analysis	
15:20-15:30		Questions and feedback	
Fri 16/02		Conclusions and future	
09:30-11:30		Group presentation of a hot topic	
11:30-12:00		Microscope company role play	
13:00-13:30	Sylvie Le Guyader	Course conclusions: Key concepts of light microscopy	
13:30-14:00		Portfolio and feedback	
Evening		Alumni pub	
After		Portfolio peer-review and submission	