

Live Cell Imaging Facility Microscopy course 30 Jan- 17 Feb 2023

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 30/01 09:00-09:30 09:30-10:30 10:45-11:45 12:45-13:45 13:45-14:30 14:30-15:30 15:45-16:15 16:15-16:30 16:30-17:15		Module 1: Student Imaging Challenge Presentations Welcome and introduction Student Imaging Challenge Presentations Student Imaging Challenge Presentations Student Imaging Challenge Presentations Guided tour of the LCI core facility Student Imaging Challenge Presentations Group discussion and conclusions Assignments, questions and feedback, Module 1 Preparation to Module 2
	Tues 31/01 09:00-09:15 09:15-09:20 09:20-09:50 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 15:40-17:00 17:00-17:15	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 Feedback and questions about assignments Lecture: Key concepts of light microscopy 1 Lecture: Nature of light Lecture: Basic optics for light microscopy Lecture: Image formation Lecture: Key concepts of light microscopy 2 Group quizzes: Basic optics and Image formation Bleedthrough assessment workshop, Part 2 Bleedthrough assessment workshop, Part 3 Lecture: Fluorescence and fluorophores Group quiz and discussion: Finding alternative fluorophores Assignments, questions and feedback, Module 2
	Wed 01/02 09:00-09:05 09:05-10:20 10:30-12:00 13:00-13:30 13:30-14:30 14:45-17:00 17:00-17:15	Sylvie Le Guyader Sylvie Le Guyader Sylvie Le Guyader Sylvie Le Guyader Sylvie Le Guyader	Module 3: Anatomy of a microscope Feedback and questions about assignments Lecture: Anatomy of a microscope, Part 1 Lecture: Anatomy of a microscope, Part 2 Lecture: Anatomy of a microscope, Part 3 Workshop: Anatomy of a microscope: video and survey demo Workshop: Anatomy of a microscope Assignments, questions and feedback, Module 3
	Thurs 02/02 09:00-09:05 09:05-10:05 10:15-10:50 10:50-11:20 11:20-11:40 11:40-12:00 13:00-13:25 13:25-14:40 14:55-15:30 15:30-15:50 15:50-16:35 16:35-17:00 17:00-17:15	Sylvie Le Guyader Sylvie Le Guyader Sylvie Le Guyader Jianjiang Hu Sylvie Le Guyader	Module 4: Working with objectives Feedback and questions about assignments Lecture: Objectives Group discussion: Objectives Group discussion: Microscope company role play Lecture: Point Spread Function and resolution Individual quiz and discussion: 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: tiling and autofocus Group discussion: Focus strategy Group discussion and quiz: PSF, resolution and scientific question Week 1 quizzes Assignments, questions and feedback, Module 4 and week 1
Fri 03/02			Assignments and Workshop: Student imaging challenge
Mon 06/02			Assignments and Workshop: Student imaging challenge
Week 2	Tues 07/02 09:00-09:15 09:15-10:00 10:10-10:30 10:30-11:30 11:30-12:00 13:00-14:00 14:00-15:00 15:15-16:30 16:30-17:00	Gabriela Imreh David Unnersjö-Jess Gabriela Imreh Sylvie Le Guyader Gabriela Imreh	Module 5: Sample preparation Feedback and question about week 1 and portfolio. Introduction to week 2 Questions and group discussion: Sample preparation and Immunostaining. Group discussion: Acquiring images with all your microscope objectives Lecture: Clearing and expansion microscopy Teacher Imaging Challenge: What did I see in your samples this week? Lecture: Preparing and imaging live samples Workshop: The art of bleaching the sample Group discussions and quizzes Lecture: Filter-based versus spectral imaging and linear unmixing
	Wed 08/02 09:00-09:10 09:10-09:25 09:25-10:00 10:10-11:00 11:00-11:30 11:30-12:00 13:00-15:00 15:15-16:15 16:15-16:40 16:40-17:00 17:00-17:15	Sylvie Le Guyader Sylvie Le Guyader Anna Burvall Oliver Garner/Marie Andersson Sylvie Le Guyader Sylvie Le Guyader	Module 6: Capturing light Feedback and questions about assignments Group discussion: Filter-based versus spectral detector Lecture: Sensors and introduction to pixel size Lecture: Signal, background and noise Group discussion: Signal to Background ratio in your images Workshop: Speed versus noise Lecture: Resolution, contrast, Nyquist sampling and MTF curves Workshop: Camera Group discussion: Sensors Lecture: Introduction to Fourier space and Fourier transforms Assignments, questions and feedback, Module 6
	Thurs 09/02 09:00-09:10 09:10-10:50 10:50-11:20 11:20-12:00 13:00-14:40 14:55-15:25 15:25-16:00 16:00-16:30 16:30-17:00	Sylvie Le Guyader Sylvie Le Guyader Sylvie Le Guyader	Module 7: The digital image Feedback and questions about assignments Lecture: Bridging concepts: resolution, contrast, objectives, sampling rate Quiz and group discussion: Sampling Week 2 quizzes Lecture: Saturation, under exposure, bit depth, dynamic range and image display Group discussion: Saturation, bit depth and display for your images Lecture: Setting imaging parameters on detector- and camera-based systems Group discussion: Setting imaging parameters on your microscope Assignments, questions and feedback, Module 7
	Fri 10/02		
Mon 13/02			Assignments and Workshop: Student imaging challenge
Week 3	Tues 14/02 09:00-09:10 09:10-09:30 09:30-10:00 10:10-11:10 11:10-11:20 11:20-11:50 11:50-13:00 13:00-13:10 13:10-14:00 14:00-14:20 14:20-14:50 14:50-15:15 15:30-16:50 16:50-17:00 17:00-17:15	Victoria Menendez Benito Hans Blom Simone Lepper Sylvie Le Guyader Jianjiang Hu Gabriela Imreh Jeremy Adler	Module 8: Off the beaten wide field and confocal track Feedback and questions about assignments Teacher Imaging Challenge: What did I see in your samples this week? Lecture: High throughput/content imaging Lecture: Introduction to super resolution microscopy <i>Break</i> Lecture: Artificial Intelligence in microscopy <i>Lunch</i> Lecture: Introduction to deconvolution Group assignment: Test 2D and 3D deconvolution Group discussion: Off the beaten track Workshop: Widefield vs single-point confocal Quizzes Lecture and Workshop: Colocalization Quiz: Image analysis strategy and analysis question Assignments, questions and feedback, Module 8
	Wed 15/02 09:00-09:15 09:15-10:20 10:30-11:45 13:00-15:00 15:15-17:00 17:00-17:15	Sylvie Le Guyader Gert Hegelsson Petr Walczysko	Module 9: Publishing images Discussion about the single point confocal vs WF workshop Lecture: How to deal with images for publications, image formats Lecture: Ethics in imaging Workshop: How to easily make figures for publication with OMERO.figure Quizzes and group discussion: reformulating your scientific question Assignments, questions and feedback, Module 9
	Thurs 16/02 09:00-10:00 10:10-12:10 13:10-15:10 15:10-15:20 15:20-15:30	Gisele Miranda G. Miranda/F. Nysjö/A. Klemm G. Miranda/F. Nysjö/A. Klemm Sylvie Le Guyader	Module 10: Image analysis Lecture: Introduction to Bioimage analysis Workshop: Image analysis Workshop: Image analysis Conclusion: Reminder of the key concepts of light microscopy. Questions and feedback Assignments, questions and feedback, Module 10
	Fri 17/02 13:00-15:00		
After			Portfolio peer-review and submission