

The Live Cell Imaging Facility Microscopy course 27 Jan- 14 Feb 2025

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
	Before the course		Preparation of own sample and presentation, survey, collecting information, etc
Week 1	Mon 27/01 09:00-09:20 09:20-10:35 11:00-12:15 13:15-14:30 15:00-16:15 16:15-16:40 16:40-17:10 17:10-17:15		Module 1: Student Imaging Challenge Presentations Introduction Student Imaging Challenge Presentations, Group 1 Student Imaging Challenge Presentations, Group 2 Student Imaging Challenge Presentations, Group 3 Student Imaging Challenge Presentations, Group 4 Group discussion: Student Imaging Challenge Portfolio assignment Questions
	Tues 28/01 09:00-09:10 09:10-09:15 09:15-09:45 09:45-10:15 10:25-10:40 10:40-10:55 10:55-11:25 11:25-11:50 11:50-12:00 13:00-15:00 15:15-15:45 15:45-17:10 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 Sylvie Le Guyader Sylvie Le Guyader	Module 2: Working with light and fluorophores Feedback, questions, ILOs and portfolio 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 Lecture: Fluorescence and fluorophores Workshop: Assessment of imaging efficiency and bleedthrough Workshop: Assessment of imaging efficiency and bleedthrough Workshop: Assessment of imaging efficiency and bleedthrough peer review Group quizzes Questions
	Wed 29/01 09:00-09:10 09:10-10:10 10:10-10:20 10:30-11:10 11:10-11:30 11:30-12:00 13:00-13:40 13:40-14:40 14:55-17:10 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 Quizzes and group discussion Workshop: Anatomy of a microscope: video and survey demo Workshop: Anatomy of a microscope Questions
	Thurs 30/01 09:00-09:10 09:10-10:10 10:20-11:25 11:25-11:45 11:45-12:00 13:00-13:25 13:25-14:40 14:55-15:30 15:30-16:00 16:00-16:45 16:45-17:10 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: Objectives 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 quiz: PSF, resolution and scientific question Week 1 quizzes Questions
	Fri 31/01		Assignments, Student Imaging Challenge Workshop
	Mon 03/02		Assignments, Student Imaging Challenge Workshop
	Tues 04/02 09:00-09:20 09:20-09:30 09:30-09:45 09:45-10:15 10:25-11:40 11:40-12:00 13:00-14:30 14:30-15:15 15:30-16:30	Sylvie Le Guyader Gabriela Imreh Gabriela Imreh David Unnersjö-Jess Sylvie Le Guyader	Module 5: Sample preparation Feedback, questions, ILOs and portfolio Discussion: Acquiring images with all your microscope objectives 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

Week 2	16:30-16:45		Group discussion: The perfect sample
	16:45-17:10		Group quizzes
	17:10-17:15		Questions
	Wed 05/02		Module 6: The digital image
	09:00-09:10		Feedback, questions, ILOs and portfolio
	09:10-10:00	Sylvie Le Guyader	Lecture: Bridging concepts: optical and digital resolutions, contrast and sampling rate
	10:10-11:10	Sylvie Le Guyader	Lecture: Bridging concepts: optical and digital resolutions, contrast and sampling rate
	11:10-12:00		Quiz and group discussion: Actual and ideal pixel size in your images
	13:00-13:15	Sylvie Le Guyader	Lecture: Sensors
	13:00-14:00	Sylvie Le Guyader	Lecture: Signal, background and noise
	14:00-14:30		Workshop: Speed versus noise
	14:30-15:00		Group discussion: Measure the SNR and SNB ratios in your images
	15:15-16:30	Sylvie Le Guyader	Group discussion: Improve the SNR and SNB on your system and in your images
	16:30-16:55	Gabriela Imreh	Workshop: Widefield vs single-point confocal
16:55-17:10		Group discussion: Widefield vs single-point confocal	
17:10-17:15		Questions	
Thurs 06/02		Module 7: Capturing light	
09:00-09:10		Feedback, questions, ILOs and portfolio	
09:10-10:00	Sylvie Le Guyader	Lecture: Saturation, under exposure, bit depth, dynamic range and image display	
10:10-11:00	Sylvie Le Guyader	Lecture: Saturation, under exposure, bit depth, dynamic range and image display	
11:10-12:00		Group discussion: Saturation, bit depth and display for your images	
13:00-13:20	Gabriela Imreh	Lecture: Imaging multiple colours at once	
13:20-13:35		Group discussion: Imaging multiple colours at once	
13:35-14:00		Quizzes	
14:00-14:45	Oliver Garner/Marie Andersson	Workshop: Camera	
14:45-15:00	Sylvie Le Guyader	Lecture: Reverse-thinking your experiment	
15:15-16:00	Sylvie Le Guyader	Lecture: Workflow to set parameters on detector- and camera-based systems	
16:00-16:45		Group discussion: How do you set the parameters on your microscope?	
16:45-17:10		Week 2 quizzes	
17:10-17:15		Questions	
Fri 07/02		Assignments, Student Imaging Challenge Workshop	
Mon 10/02		Assignments, Student Imaging Challenge Workshop	
Week 3	Tues 11/02		Module 8: Off the beaten track
	09:00-09:20		Feedback, questions, ILOs and portfolio
	09:20-10:00		Teacher Imaging Challenge: What did I see in your samples this week?
	10:00-10:30	Andrii Rogov	Lecture: Artificial Intelligence in light microscopy
	10:40-11:40	Hans Blom	Lecture: Introduction to super resolution microscopy
	11:40-12:00		Quizzes
	13:00-13:15	Erik Wernersson	Lecture: Introduction to 2D and 3D deconvolution
	13:15-14:00	Erik Wernersson	Workshop: Test 2D and 3D deconvolution
	14:00-15:00		Quizzes
	15:15-15:35	Sylvie Le Guyader	Lecture: Introduction to Fourier space and Fourier transforms
	15:35-15:45		Group discussion: Fourier transform your images
	15:45-16:30	Jeremy Adler	Lecture: Colocalization
	16:30-17:10		TBD
	17:10-17:15		Questions
	Wed 12/02		Module 9: Publishing images
	09:10-09:50		Group discussion: Microscope company role play
	10:00-12:00	Petr Walczysko	Workshop: How to easily make figures for publication with OMERO.figure
	13:00-14:00	Sylvie Le Guyader	Lecture: Publishing images
	14:00-15:00		Group discussion: Write your Material and Methods and scientific question metrics
15:15-16:15	Douglas Cromey	Lecture: Ethics in imaging	
16:15-16:20		Questions	
Thurs 13/02		Module 10: Image analysis and Course conclusions	
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/AIDA DataHub/NBIS	Workshop: Image analysis	
13:20-15:20	G. Miranda/AIDA DataHub/NBIS	Workshop: Image analysis	
15:35-16:00	Sylvie Le Guyader	Course conclusions: Reminder of the key concepts of light microscopy	
Evening		Alumni pub	
Fri 14/02		Portfolio peer-review and final submission	
10:00-12:00		Portfolio peer-review	
13:00-15:00		Peer-review discussion and final portfolio submission	