

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 16:40-16:45		Module 1: Student imaging challenges Introduction Student Imaging Challenge Presentations Student Imaging Challenge Presentations Student Imaging Challenge Presentations Student Imaging Challenge Presentations Group discussion: New ideas Questions
	Tues 28/01 09:00-09:10 09:10-09:15 09:15-09:45 09:45-10:15 10:45-11:00 11:00-11:15 11:15-11:25 11:25-11:50 11:50-12:00 13:00-15:00 15:15-17:10 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, Learning Objectives and portfolios 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 quiz: Image formation Lecture: Fluorescence and fluorophores Workshop: Imaging efficiency and bleedthrough Workshop: Imaging efficiency and bleedthrough Workshop: Imaging efficiency and bleedthrough peer review and 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, Learning Objectives and portfolios Lecture: Anatomy of a microscope: architecture, transmitted light versus fluorescence Group quizzes Lecture: Anatomy of a microscope: wide field and single-point confocals Group 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, Learning Objectives and portfolios 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 09:20-09:35 09:35-10:05 10:15-11:30 11:30-12:00 13:00-14:10 14:10-14:30 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, Learning Objectives and portfolios 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 Group discussion: How can you improve your immunostaining? Lecture: Clearing and expansion microscopy Workshop: The art of bleaching the sample

Week 2	16:30-17:10		Group discussion and quizzes: The perfect sample for light microscopy
	17:10-17:15		Questions
	Wed 05/02		Module 6: The digital image
	09:00-09:10		Feedback, questions, Learning Objectives and portfolios
	09:10-10:00	Sylvie Le Guyader	Lecture: Bridging concepts: optical and digital resolutions, contrast and sampling
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	10:50-11:50		Group discussion: Does the pixel size in your images fulfil the Nyquist sampling theorem?
	12:50-13:05	Sylvie Le Guyader	Lecture: Sensors
	13:05-14:00	Sylvie Le Guyader	Lecture: Signal, background and noise
	14:00-14:30		Workshop: Speed versus noise
	14:30-15:00		Group discussion: How could you improve the SNR in your images?
	15:15-16:30		Group discussion: How could you improve the SBR in your images?
	16:30-16:55	Gabriela Imreh	Workshop: Widefield vs single-point confocal
	16:55-17:10		Group discussion: Wide field vs single-point confocal
17:10-17:15		Questions	
Thurs 06/02		Module 7: Capturing light	
09:00-09:10		Feedback, questions, Learning Objectives and portfolios	
09:10-10:00	Sylvie Le Guyader	Lecture: Saturation, under exposure, bit depth, dynamic range and image display	
10:10-10:50	Sylvie Le Guyader	Lecture: Saturation, under exposure, bit depth, dynamic range and image display	
10:50-11:00		Group quizzes	
11:00-12:00		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	Marie Andersson	Workshop: Camera	
14:45-15:00		Group discussion: reverse-thinking your experiment	
15:15-16:00	Sylvie Le Guyader	Lecture: Typical workflow to set imaging parameters	
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, Learning Objectives and portfolios
	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 on your images
	14:00-15:00		Quizzes or discussion: how could AI, super resolution or deconvolution help your project?
	15:15-15:35	Sylvie Le Guyader	Lecture: Introduction to Fourier space and Fourier transforms
	15:35-15:45		
	15:45-16:30	Fabrice Cordelières	Lecture: Colocalization
	16:30-17:10		Group discussion: Relationship between image analysis strategy and the scientific question
	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	
15:15-15:35	Douglas Cromey	Lecture: Ethics in imaging	
15:35-16:15	Douglas Cromey	Workshop: Ethics in imaging	
16:15-16:20		Questions	
Thurs 13/02		Module 10: Image analysis and Course conclusions	
09:00-09:10		Feedback, questions, Learning Objectives and portfolios	
09:10-10:10	Agustin Corbat	Lecture: Introduction to Bioimage analysis	
10:20-12:20	Agustin Corbat	Workshop: Image analysis	
13:20-15:20	Agustin Corbat	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

13:00-15:00

Portfolio peer-review and questions

Final portfolio submission