The Live Cell Imaging Facility Microscopy course - 08 Jan- 19 Feb 2027

Schedule subject to last minute changes. All times are in Central European Time (UTC +1)

In Blue: These activities are publicly broadcasted. No registration is needed. Zoom link on the LCI website.

	When	Who	What
	08/01 - 22/01		**Preparation: own sample, presentation, survey, collecting information, etc**
Week 1	**Mon 25/01**		**Module 1: Student imaging challenges**
	09:00-09:20		Introduction
	09:20-10:35		Student Imaging Challenge Presentations
	11:00-12:15		Student Imaging Challenge Presentations
	13:15-14:30		Student Imaging Challenge Presentations
	15:00-16:15		Student Imaging Challenge Presentations
	16:15-16:30		Group discussion: New ideas
	16:30-17:00		Group discussion: Which metrics does your scientific question require?
	17:00-17:15		Questions
	Tue 26/01		Assignments
	Wed 27/01		**Module 2: Working with light and fluorophores**
	09:00-09:10		Feedback, questions, Learning Objectives and portfolios
	09:10-09:15	Sylvie Le Guyader	Lecture: Key concepts of light microscopy 1
	09:15-09:40	Sylvie Le Guyader	Lecture: Nature of light
	09:40-10:05	Sylvie Le Guyader	Lecture: Basic optics for light microscopy
	10:15-10:30	Sylvie Le Guyader	Lecture: Image formation
	10:30-11:00		Group quizzes
	11:00-11:15	Sylvie Le Guyader	Lecture: Key concepts of light microscopy 2
	11:15-12:00	Sylvie Le Guyader	Lecture: Fluorescence and fluorophores
	13:00-15:00	Sylvie Le Guyader	Workshop: Imaging efficiency and bleedthrough
	15:15-17:15	Sylvie Le Guyader	Workshop: Imaging efficiency and bleedthrough peer review
	Thu 28/01		Assignments
	Fri 29/02		**Module 3: Anatomy of a microscope**
	09:00-09:10		Feedback, questions, Learning Objectives and portfolios
	09:10-10:05	Sylvie Le Guyader	Lecture: Anatomy of a microscope: architecture, transmitted light versus fluorescence
	10:05-10:20		Group quizzes
	10:30-11:15	Sylvie Le Guyader	Lecture: Anatomy of a microscope: wide field and single-point confocals
	11:15-11:30		Group quizzes
	11:30-12:00	Sylvie Le Guyader	Lecture: Anatomy of a microscope: multipoint confocals and light sheet systems
	13:00-13:40		Quizzes and group discussion
	13:40-14:40	Sylvie Le Guyader	Workshop: Anatomy of your microscope: video and survey demo
	14:55-17:15	Sylvie Le Guyader	Workshop: Anatomy of your microscope
Week 2	**Mon 01/02**		Assignments, Student Imaging Challenge Workshop
	Tue 02/02		**Module 4: Working with objectives**
	09:00-09:10		Feedback, questions, Learning Objectives and portfolios
	09:10-10:10	Sylvie Le Guyader	Lecture: Objectives
	10:20-10:50	Sylvie Le Guyader	Lecture: Point Spread Function and resolution
	10:50-11:20		Quiz: Objectives, PSF and resolution
	11:20-12:10		Group discussion: The optical resolution of the objectives on YOUR microscope
	13:10-13:50	Sylvie Le Guyader	Lecture: Refractive index mismatch and optical aberrations
	13:50-14:35	Jianjiang Hu	Workshop: Refractive Index mismatch
	14:35-15:00		Group quizzes
	15:15-15:50	Sylvie Le Guyader	Lecture: Efficient strategies to find the area of interest: large FOV, tiling and autofocus
	15:50-16:05		Questions
	16:05-16:35		Group discussion: Focus strategy
	16:35-17:15		Group quizzes
	Wed 03/02		Assignments, Student Imaging Challenge Workshop
	Thu 04/02		**Module 5: Sample preparation**
	09:00-09:15		Feedback, questions, Learning Objectives and portfolios
	09:15-09:40	Sylvie Le Guyader	Teacher Imaging Challenge: What did I see in your samples?
	09:40-10:30	Gabriela Imreh	Lecture: Sample preparation tips - part 1
	10:40-11:30	Gabriela Imreh	Lecture: Sample preparation tips - part 2
	11:30-12:00		Group discussion: How can you improve your sample preparation?
	13:00-13:45	David Unnersjö-Jess	Lecture: Clearing and expansion microscopy
	13:45-14:45	Sylvie Le Guyader	Workshop: The art of bleaching the sample
	14:45-15:30	Gabriela Imreh	Lecture: Immunostaining - part 1
	15:45-16:15	Gabriela Imreh	Lecture: Immunostaining - part 2
	16:15-16:35		Group discussion: How can you improve your immunostaining?
	16:35-17:10		Group discussion and quizzes: The ideal sample for light microscopy
	17:10-17:15		Questions
	Fri 05/02		Assignments, Student Imaging Challenge Workshop

Week 3	**Mon 08/02**		**Module 6: The digital image**
	09:00-09:10		Feedback, questions, Learning Objectives and portfolios
	09:10-10:10	Sylvie Le Guyader	Lecture: Bridging concepts: optical and digital resolutions, contrast and sampling
	10:20-11:00	Sylvie Le Guyader	Lecture: Bridging concepts: optical and digital resolutions, contrast and sampling
	11:00-12:00		Group discussion: Does the pixel size in your images fulfil the Nyquist sampling theorem?
	13:00-13:20	Sylvie Le Guyader	Lecture: Sensors
	13:20-13:35		Group quizzes
	13:35-14:35	Sylvie Le Guyader	Lecture: Signal, background and noise
	14:55-15:25		Group discussion: How could you improve the SBR in your images?
	15:25-15:55		Workshop: Speed versus noise
	15:55-16:25		Group discussion: How could you improve the SNR in your images?
	16:25-17:10		Group quizzes
	17:10-17:15		Questions
	Tue 09/02		Assignments, Student Imaging Challenge Workshop
	Wed 10/02		**Module 7: Capturing light**
	09:00-09:10		Feedback, questions, Learning Objectives and portfolios
	09:10-10:05	Sylvie Le Guyader	Lecture: Saturation, under exposure, bit depth and image display
	10:15-10:35	Sylvie Le Guyader	Lecture: Saturation, under exposure, bit depth and image display
	10:35-11:30		Group discussion: What do you need to segment in your images?
	11:30-12:00		Group quizzes
	13:00-13:45	Gabriela Imreh	Lecture: Imaging multiple colours at once
	13:45-14:00		Group discussion: How to image multiple colours simultaneously?
	14:00-15:00	Marie Andersson	Workshop: Camera
	15:15-15:40	Sylvie Le Guyader	Lecture: Typical workflow to set imaging parameters
	15:40-16:10		Group discussion: Choosing the imaging settings on your microscope?
	16:10-17:10		Group quizzes
	17:10-17:15		Questions
	Thu 11/02		Assignments
	Fri 12/02		Assignments
Week 4	**Mon 15/02**		**Module 8: Off the beaten track**
	09:00-09:10		Feedback, questions, Learning Objectives and portfolios
	09:10-10:00		Teacher Imaging Challenge: What did I see in your samples?
	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 deconvolution
	14:00-14:55		Quizzes
	15:10-15:30	Sylvie Le Guyader	Lecture: Introduction to Fourier transforms
	15:30-15:45		Group discussion: Ai and super resolution in your project
	15:45-16:45	Fabrice Cordelières	Lecture: Colocalization
	16:45-17:10		Quizzes
	17:10-17:15		Questions
	Tue 16/02		Assignments
	Wed 17/02		**Module 9: Publishing images**
	09:00-09:10		Feedback, questions, Learning Objectives and portfolios
	09:10-09:25		Teacher Imaging Challenge: What did I see in your samples?
	09:25-09:50		Group discussion: Microscope company role play
	10:00-12:00	Petr Walczysko/Will Moore	Workshop: How to easily make figures for publication with OMERO.figure
	13:00-14:10	Sylvie Le Guyader	Lecture: Publishing and managing images
	14:10-15:00		Quiz and Group discussion: Write your Material and Methods
	15:15-15:35	Douglas W. Cromey	Lecture: Ethics in imaging
	15:35-16:15	Douglas W. Cromey	Workshop: Ethics in imaging
	16:15-16:30		Questions
	Thu 18/02		**Module 10: Image analysis and Course conclusions**
	09:00-10:00	Gisele Miranda	Lecture: Introduction to Bioimage analysis
	10:10-12:10	Gisele Miranda	Workshop: Image analysis
	13:10-15:10	Gisele Miranda	Workshop: Image analysis
	15:10-15:35	Sylvie Le Guyader	Course conclusions: Reminder of the key concepts of light microscopy
	Evening		Alumni pub
	Fri 19/02		**Portfolio consolidation and final submission**