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**		**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
	16:15-16:35		Group discussion: New ideas
	16:35-17:00		Group discussion: Which metrics does your scientific question require?
	17:00-17:10		Questions
	Tues 28/01		**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
	09:15-09:45	Sylvie Le Guyader	Lecture: Nature of light
	09:45-10:15	Sylvie Le Guyader	Lecture: Basic optics for light microscopy
	10:45-11:00	Sylvie Le Guyader	Lecture: Image formation
	11:00-11:15	Sylvie Le Guyader	Lecture: Key concepts of light microscopy 2
	11:15-11:25		Group quiz: Image formation
	11:25-11:50	Sylvie Le Guyader	Lecture: Fluorescence and fluorophores
	11:50-12:00		Workshop: Imaging efficiency and bleedthrough
	13:00-15:00	Sylvie Le Guyader	Workshop: Imaging efficiency and bleedthrough
	15:15-17:10	Sylvie Le Guyader	Workshop: Imaging efficiency and bleedthrough peer review and quizzes
	17:10-17:15		Questions
	Wed 29/01		**Module 3: Anatomy of a microscope**
	09:00-09:10		Feedback, questions, Learning Objectives and portfolios
	09:10-10:10	Sylvie Le Guyader	Lecture: Anatomy of a microscope: architecture, transmitted light versus fluorescence
	10:10-10:20		Group quizzes
	10:30-11:10	Sylvie Le Guyader	Lecture: Anatomy of a microscope: wide field and single-point confocals
	11:10-11:30		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
	14:55-17:10	Sylvie Le Guyader	Workshop: Anatomy of your microscope
	17:10-17:15		Questions
	Thurs 30/01		**Module 4: Working with objectives**
	09:00-09:10		Feedback, questions, Learning Objectives and portfolios
	09:10-10:10	Sylvie Le Guyader	Lecture: Objectives
	10:20-10:40	Sylvie Le Guyader	Lecture: Point Spread Function and resolution
	10:40-11:00		Quiz: Objectives, PSF and resolution
	11:00-12:00		Group discussion: The optical resolution of the objectives on YOUR microscope
	13:00-13:25	Sylvie Le Guyader	Lecture: Refraction index mismatch and optical aberrations
	13:25-14:25	Jianjiang Hu	Workshop: Objectives and Refraction Index mismatch
	14:25-15:00		Group quizzes
	15:15-15:50	Sylvie Le Guyader	Lecture: Efficient strategies to find the area of interest: large FOV, tiling and autofocus
	15:50-16:20		Group discussion: Focus strategy
	16:20-16:50		Group quizzes
	16:50-17:00		Questions
	Fri 31/01		Assignments, Student Imaging Challenge Workshop
	Mon 03/02		Assignments, Student Imaging Challenge Workshop
	Tues 04/02		**Module 5: Sample preparation**
	09:00-09:20		Feedback, questions, Learning Objectives and portfolios
	09:20-09:40		Group discussion: Preparing and imaging live samples
	09:40-10:05	Sylvie Le Guyader	Teacher Imaging Challenge: What did I see in your samples this week?
	10:15-11:30	Gabriela Imreh	Lecture: Sample preparation tips
	11:30-12:00		Group discussion: How can you improve your sample preparation?
	13:00-14:10	Gabriela Imreh	Lecture: Immunostaining troubleshooting
	14:10-14:40		Group discussion: How can you improve your immunostaining?

Week 2	14:40-15:25	David Unnersjö-Jess	Lecture: Clearing and expansion microscopy
	15:40-16:40	Sylvie Le Guyader	Workshop: The art of bleaching the sample
	16:40-17:10		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
	10:10-10:50	Sylvie Le Guyader	Lecture: Bridging concepts: optical and digital resolutions, contrast and sampling
	10:50-11:50		Group discussion: Does the pixel size in your images fulfil the Nyquist sampling theorem?
	11:50-12:00		Group quiz
	13:00-13:20	Sylvie Le Guyader	Lecture: Sensors
	13:20-14:10	Sylvie Le Guyader	Lecture: Signal, background and noise
	14:10-14:40		Workshop: Speed versus noise
	14:40-15:10		Group discussion: How could you improve the SNR in your images?
	15:25-16:40		Group discussion: How could you improve the SBR in your images?
	16:40-17:10		Group quizzes
	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 and image display
	10:10-11:00	Sylvie Le Guyader	Lecture: Saturation, under exposure, bit depth and image display
	11:00-12:00		Group discussion and quizzes: What do you need to segment in your images?
	13:00-13:30	Gabriela Imreh	Lecture: Imaging multiple colours at once
	13:30-14:00		Group discussion: How does your system image multiple colours?
	14:00-14:45	Marie Andersson	Workshop: Camera
	15:00-15:45	Sylvie Le Guyader	Lecture: Typical workflow to set imaging parameters
	15:45-16:15		Group discussion: How do you set the parameters on your microscope?
	16:15-17:10		Group quizzes
	17:10-17:15		Questions
	Fri 07/02		Assignments, Student Imaging Challenge Workshop
Week 3	**Mon 10/02**		Assignments, Student Imaging Challenge Workshop
	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 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: Ai and super resolution in your project
	15:45-16:30	Fabrice Cordelières	Lecture: Colocalization
	16:30-17:10		Quizzes
	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
	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 consolidation and final submission**