Fundamentals of Widefield and Confocal Microscopy and Imaging

EMBL COURSE

We have moved our website to embl.org/events. The content below is no longer being updated.

EMBL Courses and Conferences during the Coronavirus pandemic

With the onsite programme paused, many of our events are now being offered in virtual formats.

Registration is open as usual for many events, with back-up plans in place to move further courses and conferences online as necessary. Registration fees for any events affected by the COVID-19 disruption are fully refundable.

More information for participants of events at EMBL Heidelberg can be found here.

Programme

Got something to say? Tweet it with #EMBLmicroscopy

HIDE ALL

Day 1 - Monday 11 June 2018

Time

08:45 - 09:00 **Arrival & Welcome**

Time	
09:00 - 13:00	**Basics of optics and microscopy** • *Theoretical basics of light and optics* • *Types of microscope frames – and types of optics* • *Set up bright field microscopes and the appropriate optics for different needs* • *Cleaning, centering adjusting and operating a microscope* • *Basic set up and use of imaging devices* **Hands on session 1**
13:00 - 14:00	Lunch at EMBL canteen
14:00 - 15:00	**Contrast methods** • *Introduction into contrast methods* *(phase contrast and differential interference contrast/DIC)*
15:00 - 17:30	**Contrast methods - set up and alignment** • *Set up and use of contrast methods:* *phase contrast and differential interference contrast/DIC* **Hands on session 2**
17:30 - 18:00	Discussing open questions
18:00 - 19:00	Dinner at EMBL cafeteria
19:00	Bus to ISG Hotel

Day 2 - Tuesday 12 June 2018

Time	
09:00 - 12:30	**Basics of digital imaging** • *Adaptation of digital cameras and their alignment* • *Interpretation of image content, histogram and digital filter functions* • *Improving digital image contrast*
12:30 - 13:30	Lunch at EMBL canteen
13:30 - 16:00	**Fluorescence microscopy I** • *Introduction to fluorescence microscopy* • *Setting up of microscopes and cameras for fluorescence observation* • *The different types of illumination sources (e.g. mercury, xenon, metal halide or LED)* • *Cubes, filters and objectives* • *Find the appropriate filter combination for a given fluorochrome and application* **Hands on session 3**
16:00 - 17:30	Discussing open questions

Time	
17:30	Bus via ISG Hotel to restaurant
18:30	Dinner in downtown Heidelberg

Day 3 - Wednesday 13 June 2018

Time	
09:00 - 11:30	**Fluorescence microscopy II** • *Auto-fluorescence – a source for noise* • *Digital imaging for fluorescence microscopy* • *Specific needs of digital cameras* • *Digital multicolor handling* • *Acquisition of multidimensional images (3D, time)* **Hands on session 3 (continued)**
11:30 - 11:35	Group picture
11:35 - 12:30	Guided tour at the EMBL Advanced light microscopy facility (ALMF)
12:30 - 13:30	Lunch at EMBL canteen
13:30 - 15:00	Introduction to the confocal microscope (Talk)
15:00 - 18:00	**Hands on session (Group work)** *Different applications will be covered in small groups.* *Module 1: Multicolor imaging* *Module 2: Photomanipulation techniques – FRAP, FLIP and Photoconversion* *Module 3: 3D image collection and enhancement – zooming, resolution, SNR, z-stacks, IMARIS basic* *Module 4: Time-lapse imaging, bleaching and viability; Multi-Area Time-Lapses and Stitching*
18:00 - 19:00	Dinner at EMBL canteen
19:00	Bus to ISG Hotel

Day 4 - Thursday 14 June 2018

Time	
09:00 - 10:00	FRAP and Photoconversion (Talk)
10:00 - 13:00	**Hands on session (Group work)** *Work in Modules*
13:00 - 14:00	Lunch at EMBL canteen

Time	
14:00 - 17:00	**Hands on session (Group work)** *Work in Modules*
17:00 - 18:00	Comparative time-lapse overnight experiment on three different setups
18:00 - 19:00	Dinner at EMBL canteen
19:00	Bus to ISG Hotel

Day 5 - Friday 15 June 2018

Time	
09:00 - 09:30	Evaluation and summary of overnight timelapse acquisition
09:30 - 12:30	**Hands on session (Group work)** *Work in modules*
12:30 - 13:00	Tips and tricks for data presentation
13:00 - 13:20	Closing remarks
13:20	Bus to main train station