



This short course, offered by the Donald Danforth Plant Science Center’s Integrated Microscopy Facility, provides a solid background on the use of light microscopy, especially confocal microscopy, as a tool to study cell and molecular biology. The course emphasizes imaging of plant tissues but its scope is not limited to this. The course consists of morning lectures that provide theoretical background in various aspects of light microscopy, and afternoon lab sessions that give the student hands-on experience in operating a confocal microscope, the Integrated Microscopy Facility’s Leica SP-8 confocal microscope. Students will not need to attend afternoons except for their scheduled hands-on training (two hour) session(s). The course schedule is listed below. The course is designed for beginning and intermediate users of confocal microscopy, and for those wanting a refresher on confocal and light microscopy.

Instructor: Howard Berg, Director of the Integrated Microscopy Facility

Confocal Microscopy Short Course Schedule

Monday, June 26, 2017

7:30-8:00 am	Lobby	Registration and continental breakfast in Lower Atrium
8:00-8:15	Room 59	Welcome and logistics
8:15-9:45		Principles of fluorescence microscopy; confocal microscope design, practical aspects of confocal microscopy: choice of objective/pinhole/laser/dichroics and other filters, photobleaching, sample prep, immunofluorescence, signal: noise, bleed-through, autofluorescence, oversampling in x, y, and z, detectors (continues after the break)
9:45-10:00		Coffee break
10:00-12:00	Room 59	Introduction to the Leica SP-8 confocal microscope
12:00-1:00		Lunch (the Danforth Center has a café on site)
1:00-5:00	IMF Lab	Two-hour sessions with pairs of students getting hands-on use of the confocal microscope. Students can use their own samples or samples provided by the instructor.

Tuesday, June 27, 2017

8:30-10:00	Room 59	Image formation in the light microscope, limits on resolution; microscope maintenance; transmitted light contrasting methods: phase contrast and differential interference contrast microscopy (continues after the break)
10:00-10:15		Coffee break
10:15-12:00	Room 59	Live cell imaging, deconvolution optical sectioning, multiphoton microscopy, fluorescent stains, fluorescent proteins
12:00-1:00		Lunch
1:00-5:00	IMF Lab	Two-hour sessions with pairs of students getting hands-on use of the confocal microscope. Students can use their own samples or samples provided by the instructor.

Wednesday, June 28, 2017

8:30-10:00	Room 59	The digital image; digital methods for contrast enhancement; image processing of 3D and 4D confocal data sets; Image J/FIJI
10:00-10:15		Coffee break
10:15-12:00	Room 59	Image processing continued, image ethics
12:00-1:00		Lunch
1:00-5:00	IMF Lab	Two-hour sessions with pairs of students

Thursday, June 29, 2017

8:30-10:00	Room 59	Advanced techniques. TIRF, NSOM, light sheet microscopy, SHG, FRET, FLIM, biosensors, time gating on the SP-8, FCS, spectral and hyperspectral imaging, super-resolution imaging (continues after the break)
10:00-10:15		Coffee break
10:15-12:00	Room 59	Corrective confocal/TEM, discussion of student's imaging and course wrap-up
12:00-1:00		Lunch
1:00-5:00	IMF Lab	Two-hour sessions with pairs of students

Friday, June 30, 2017

8:30-12:30; 1:00-5:00	IMF	Hands-on lab sessions
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Confocal Microscopy Short Course Registration Information

Deadline: Friday, June 23, 2017

Registration fee for the Confocal Short Course is **\$200.00** (**\$500.00** corporate) and includes Monday's continental breakfast, coffee breaks, and copies of lectures. If you are interested in attending this short course, email Pat Cosgrove, Administrative Assistant at PCosgrove@danforthcenter.org, or call 314-587-1242.

This course may be oversubscribed, **so register early.**

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