

**Analytical and Quantitative Light Microscopy
in Biology, Medicine, Materials Science**

**Marine Biological Laboratory
Woods Hole, MA, USA**

2020 AQLM SCHEDULE

Wednesday, 4/29/2020		
1:30 - 2:30 PM	Check in and get picture ID	
3:00 - 3:50	Welcome and course orientation	Course Directors, Dir. Ed
4:00 - 4:20	LECTURE: Ray Optics: Making an image	Mattheyses
4:20 - 4:50	LAB: Group work with lenses and ray tracing	Mattheyses/ Commercial Faculty
5:00 - 6:00	Wine and Cheese reception	
6:00 - 7:00	DINNER	
7:00 - 7:30	LAB Continued	Mattheyses
7:30 - 7:50	LECTURE: Ray optics: Apertures and field stops	Mattheyses
7:50 - 8:30	LAB: Group work with irises	Mattheyses/ Commercial Faculty
8:30 - 8:45	LECTURE: Ray optics: Building a microscope CONDENSER and imaging onto a sensor	Mattheyses
8:45 - 9:30	LAB: Group work: Building a microscope CONDENSER in Kohler illumination; bulding the imaging path	Mattheyses/ Commercial Faculty
9:30 - 9:50	LECTURE: Report out on condenser. Imaging onto a sensor	Mattheyses
9:50 - 10:00	LAB: Building the imaging path; measuring the magnification of your microscope	Mattheyses/ Commercial Faculty
Thursday, 4/30/2020		
8:45 - 8:50 AM	Daily Overview	Maddox
8:50-10:00	LECTURE: Wave Optics: Infinity-corrected objectives, Diffraction and Resolution; LAB: Measuring the resolution of your microscope	Mattheyses
10:00-10:45	Intro digital images + FIJI	
10:45 - 12:00	Koehler lecture and lab	Mattheyses/ Commercial Faculty
12:00 - 1:00 PM	LUNCH	
1:00 - 2:00	Practical aspects of lens design	S. Ross
2:00 - 3:00	Wave optics, diffraction and contrast generation	Kner
3:00 - 4:00	Phase Contrast & Darkfield Lecture	Mehta
4:00 - 6:00	Phase Contrast & Darkfield Laboratory	Mehta/Kner/ Commercial Faculty
6:00 - 7:00	DINNER	
7:00 - 8:30	Polarization and DIC	Mehta
8:30 - 11:00	Polarization and DIC Laboratory	Mehta/ Kner

Friday, 5/1/2020		
8:45 - 9:00 AM	Daily Overview	Salmon
9:00 - 10:30	Digital Detectors	Kumar
10:30 - 12:00	Quant Lab	Maddox/ Salmon/ Commercial Faculty
12:00 - 1:00 PM	LUNCH	
1:00 - 2:30	Quant Lab	Maddox/ Salmon/ Commercial Faculty
2:30 - 3:00	Quant discussion	Maddox/ Salmon
3:00-6:00	Noise Lab	Kumar
6:00-7:00	Dinner	
7:00-8:30	Fluorescence Lecture	Salmon
8:30-11:00	Fluorescence Lab	Salmon
Saturday, 5/2/2020		
8:45 - 9:00 AM	Daily Overview	Kner
9:00 - 10:00	Point Spread Functions	Goodwin
10:00 - 11:00	Image Processing Lecture -- FIJI	Arena
11:00-12:00	Image Processing Lab 1 -- FIJI	Arena / Directors
12:00-1:00 PM	LUNCH	
1:00-3:00	Image Processing Lab 2	Arena / Directors
3:00-4:00	Fourier	Kner
4:00-5:00	Abbe	Mcilvain
5:30 - 7:00	DINNER	
7:00 - 8:00	Proteins and Probes	Campbell
8-10	Lightning Talks from Students	
10-10:30	Lightning Talks from Vendors	
Sunday, 5/3/2020		
8:45 - 9:00 AM	Daily Overview	
9:00 - 10	FRET	Maddox
10-10:30	Live Cell	Maddox
10:30-11	COFFEE BREAK	
11-12:45	Live Cell and FRET lab	Maddox/ Salmon
12:45-2 PM	LUNCH	
2-5:30	Live Cell and FRET lab (two rotations; 2-3:45, 3:45-5:15)	Maddox/ Salmon
5:30-6	Discussion of FRET Laboratory	Maddox/ Salmon
6 - 7:00	DINNER	
7:00 - 8:00	3D Microscopy I: The Problems and a Wide-Field Solution	Shaw
8:00- 11:00	Deconvolution Laboratory Exercises	Shaw
Monday, 5/4/2020		
8:45 - 9:00 AM	Daily Overview	
9:00-10:00	3D Microscopy II: Point-scanning Solutions and Their Problems	Shaw
10:00-12:30	Confocal and Multiphoton Laboratory Exercises	Shaw
12:30-1:30 PM	LUNCH	
1:30-2:00	3D Microscopy Discussion I	Shaw
2:00-3:00	3D Microscopy III: Analysing Performance and Choosing Methods	Shaw

3:00-5:30	Quantitative Evaluation of Performance in 3D Microscopy	Shaw
5:30-6:30	DINNER	
6:30-7:00	3D Microscopy Discussion II	Shaw
7:00-8:00	Light-sheet Lecture	Hillman
8:00-11:00	Light-sheet Lab	Hillman
Tuesday, 5/5/2020		
8:45 – 9:00 AM	Daily Overview	
9:00 - 11:00	Light-sheet Lab continued	
11:00 - 12:00	TIRF Lecture	Taraska
12:00 - 1:00 PM	Lunch	
1:00 - 4:00	TIRF Lab	Taraska
4:00 - 4:30	TIRF discussion	Taraska
4:30 - 5:00	AO Phillippe	Clemenceau
5:00 - 6:00	SMLM	Sochaki
6:00 - 7:00	Dinner	
7:00 - 10:00	SMLM Lab	Sochaki
10:00 - 10:30	SMLM Discussion	Sochaki
Wednesday, 5/6/2020		
8:45 - 9:00 AM	Daily Overview	
9:00-10:00	SIM Lecture	Abrahamsson
10:00 - 1:00	SIM Lab	Abrahamsson
1:00 - 4:00 PM	Lunch Buffet	
2:00 - 4:00	FREE TIME	
4:00 - 5:00	Advanced Image analysis	Paul-Gilloteaux
5:00 - 6:00	Dinner	
6:00 - 9:00	analysis lab 6-9	Paul-Gilloteaux
9:00 - 10:00	ethics 9-10	Directors
Thursday, 5/7/20		
8:45 - 9:00 AM	Daily Overview	
9:00 - 12:00	Foldscope session	Prakash / Salmon
12:00 - 1:00 PM	LUNCH	
1:00 - 2:30	Computer-hardware communication, open source microscope control	Stuurman
2:30 - 5:30	Machine Learning for Image Processing Laboratory	Cortez
5:30 - 6:30	Reception	
6:30 - 8:00	Course Dinner	
8:00 - 9:00	Dessert - Inoué Lecturer	Kiehart