hour slots / days	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10
					Optics Module						
8:00 - 9:00		Breakfast	Morning run	Morning run	Morning run	Morning run	Morning run	Morning run	Morning run	Morning run	Morning run
9:00 - 10:00		Intro to light (Florin Albeanu)	Breakfast	Breakfast	Breakfast	Breakfast	Breakfast	Breakfast	Breakfast	Breakfast	Breakfast
10:00 - 11:30		Intro to light (Florin Albeanu)	Recap	Recap		Image Analysis (Ruben)	Multiphoton imaging (Chris Xu)	3 photon microscopy (Chris Xu)	1p Patterned Stim (Florin Albeanu)		
11:30 - 11:45		Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Student presentations (widefield, 2p)
11:45 - 13:00		Optical elements and image formation (Fred Marbach)	Resolution (Priyanka Gupta)	Benchtop optics: Measure noise	Widefield Imaging - Intrinsic & calcium (Tobias Rose)	Image Analysis (Ruben)	Light Sheet imaging (Ruben Portugues)	Table of resolution (Ruben Portugues)	Adaptive optics (Benjamin Judkewitz)	Benjamin Judkewitz (Research talk)	Student presentations (widefield, 2p)
13:00 - 14:00		Lunch	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch
14:00 - 16:30		continue lecture	Benchtop optics - image golgi slides	Optics Challenge + Make Presentations		AB: Setup Intrinsic and Widefield	AB: Walking the beam	AB: 2p building discussion	AB: 2p data analysis	AB: In vivo 2p	
14:00 - 16:30		Benchtop optics - Lenses	Epifluorescence (Florin Albeanu)	Optics Challenge + Make Presentations		CD: Walking the beam	CD: Setup Intrinsic and Widefield	CD: 2p data analysis	CD: 2p building discussion	CD: SLMs	
16:30 - 16:45		Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break
16:45 - 19:00		continue lab	Benchtop optics - epifluorescence	Make presentations	Scanning and confocal (Adam Kampff)	AB: Acquire Intrinsic and Widefield	AB: Scanning software	AB: 2p building practical	AB: Analysis (2p mock data + WF data)	AB: SLMs	Tony Zador
16:45 - 19:00		continue lab	Benchtop optics - epifluorescence	Basic Optics Presentations		CD: Scanning software	CD: Acquire Intrinsic and Widefield	CD: Analysis (2p mock data + WF data)	CD: 2p building practical	CD: In vivo 2p	Tony Zador
19:00 - 20:00	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner
20:00 - 21:30	Introduction to TENSS (Florin, Raul & Adam)	Koehler Illumination (Priyanka Gupta)	Noise & image sensors (Adam Kampff)	Student chalk talks	Student chalk talks		Ruben Portugues (Research talk)	AB: continue 2p build	AB: continue analysis	LASERs (Florian Engert)	Eve Marder
21:30 - 24:00		Benchtop optics - set up Koehler	continue lab: image PSFs and brain samples			AB: Analyze Intrinsic and Widefield (mock data)	CD: Analyze Intrinsic and Widefield (mock data)	CD: continue analysis	CD: continue 2p build	Analysis: 2p TENSS Data	

hour slots / days	Day 11	Day 12	Day 13	Day 14	Day 15	Day 16	Day 17	Day 18	Day 19	Day 20	Day 21	Day 22
	Behavior/Ephys Module											
8:00 - 9:00	Morning run	Morning run	Morning run	Morning run	Morning run	Morning run	Morning run	Morning run	Morning run	Morning run	Morning run	Morning run
9:00 - 10:00	Breakfast	Breakfast	Breakfast	Breakfast	Breakfast	Breakfast	Breakfast	Breakfast	Breakfast	Breakfast	Breakfast	Breakfast
10:00 - 11:30		Passive recap (TAs) + biophysics (Mitra)	Eve Marder (Research talk)	Introduction to behavior (Mateusz Kostecki)	Patch clamp (Tomas Hromadka)	fUSI (Emilie Mace)	Tom Mrsic-Flogel (Journey in Science Talk)	Student Presentations (Behavior + Ephys)	Helen Hou (Research Talk)	Deep Learning (Ben Cowley)	Raul Muresan (Oscillations in the brain)	Student presentations (projects)
11:30 - 11:45	Coffee Break	Coffee Break		Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break
11:45 - 13:00	Electronics Intro (passive + circuits) (Mitra and Antonin)	Recordings overview + opamps (Jon)	Open Ephys Primer	Arduinos (Tomas Hromadka)	Ann Clemens (Research talk)	Jakob Voigts (Research talk)	Analysis: behavior + ephys		Georg Keller (Predictive processing)	Martha Havenith (Research talk)	Mathias Mahn (Research talk)	
13:00 - 14:00	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch		Lunch	Lunch	Lunch	Lunch
14:00 - 15:15	Electronics Lab I (voltage dividers)	Electronics Lab - III (amplification and active filtering)	Headfixed Ephys Demo (+Tomas)	Bonsai and Machine Vision Primer	Ephys and Behavior Synchronization Primer	Get Data	Analysis: behavior + ephys	Cluj Trip	Projects	Projects	Projects	Feedback
15:15 - 16:30	Electrode models (wrong R based, frequent dependent resistors) (Mitra and Antonin)				Set up Ephys + Behavior							
16:30 - 16:45	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break		Coffee Break	Coffee Break	Coffee Break	Coffee Break
16:45 - 19:00	Capacitors + RC curcuits + filtering (Mitra and Antonin)	Electronics Lab - IV (amplification and active filtering)	Ephys Signal Processing and spike sorting (Ashesh Dhawale)	Bonsai: Sensors and actuators	Set up Ephys + Behavior	Daniela Vallentin (Research talk)	Bonus Data Analysis		Projects	Projects	Projects	
19:00 - 20:00	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner / speed dating	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner
20:00 - 21:30	continue Benchtop Ephys	Upi Bhalla (Research talk)	Ashesh Dhawale (Research talk)	Bence Olveczky (Research talk)	Analysis tutorial (Daniela Vallentin)	Analysis + frequency domain (Vlad, Adriana)	Make presentations		Projects	Projects	Projects	
21:30 - 22:45	Electronic Lab II (RC circuits and passive filtering)	Electronics Lab - V Insect recording	Intro to lab setup for in vivo recordings (OE system, plug mice)	Setup assembly		Data analysis (Behavior & Ephys)						