

Final groups BIOENG-421 2025

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Cryo-EM

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Yuno Reigner (SV)
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Lectures (PHH 331)	Date & Topic	Details	Practical
1	12.09 General Intro	Get to know teachers, TAs, students and aims of the course	16.09 Measure temperature using thermistor (using M&A explorer) TL
2	19.09 Lecture LabVIEW TL Group formation (4 students, each)	Some first basic steps in LabVIEW programming	23.09 Brief intro into LabVIEW thermistor program (input and output) TL
3	26.09 Case study FACS, similarities and differences to droplet microfluidics Selection of case study topics	1.) Property to measure? 2.) Device? 3.) Working principle? 4.) Alternatives?	30.09 Preparation of bioinstrument case study
4	03.10 Preparation of bioinstrument case study		07.10 Tour through LBMM workstation labs, intro into Nature Protocols, all groups (specific slots)
5	10.10 All groups presenting case study		14.10 No practical
6	17.10 Lecture optics Homework: Students to prepare one laser/PMT blueprint FP	Mirrors, filters, microscope setup, lenses, etc.	21.10 Holidays
	25.10 Holidays		28.10 Build workstation optics 1
7	31.10 Lecture electronics	FPGA, PMTs, amplifier, function generator	04.11 Build workstation 1 optics 2
8	07.11 Intro into enzyme concentration measurement experiment (kinetics, etc.) + task FP	Enzymes, kinetics, practical task	11.11 Build workstation electronics
9	14.11 Intro to droplet analysis software (LabVIEW) TL	Software similar to Thermistor program, pdf on installation	18.11 Build workstation software: Add output LED (mimicking sorting trigger) into analysis software
10	21.11 Fundamentals of microfluidics and microfluidic chips	Flow at the microscale, microfluidic chips (manufacturing), droplet microfluidic modules	25.11 Run microfluidic experiments, e.g. determine concentration of MMP in droplets
11	28.11 Prepare presentation		2.12 Sorting Demo on LBMM workstation1 (Groups A&B)
12	05.12 Groups A & B presenting results (C&D not present)		09.12 Sorting Demo on LBMM workstation1 (Groups C&D)
13	12.12 Groups C & D presenting results (A&B not present) 15.12 Submit report (all!)		16.12 – TUESDAY! - Individual Q & A sessions (10min, each)

Green shading: Single seminar/practical with all 18 students
Red shading: Individual seminar/practical with only 6 students required (= 3 sequential 90min slots, 4.5h in total)

