

Biophysics curriculum - Molecular Biology MSc
Autumn semester, Thursday 16:00-18:00, LC0.14

Week	Date	Number	Title	Lecturer
1	09.10.	1	Introduction.	Dóczy-Bodnár Andrea
		2	Electromagnetic waves. Atomic and molecular spectra, basic principles of fluorescence.	Nagy Péter
2	09.17.	3	Selected fluorescence phenomena and applications. Lasers.	Fazekas Zsolt
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3	09.24.	5	Basic principles of optical geometry. Optical microscopy. Fluorescence microscopy.	Csomós István
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4	10.01.	7	Modern microscopy techniques: confocal microscopy, STED, STORM.	Nizsalóczki Enikő
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5	10.08.	9	Chemical potential. Brownian motion. Diffusion at the molecular level. Fick's first law. Osmosis.	Vámosi György
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6	10.15.	11	Membrane structure, membrane transport. FRAP, FCS.	Kovács Tamás
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7	1st SCT Lectures 1-10. week7, 19 October			
	10.22.	13	Electrophysiology I: Thermodynamic equilibrium potentials (Nernst, Donnan), diffusion potential. Resting membrane potential, action potential.	Varga Zoltán
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8	10.29.	15	Electrophysiology II: Ion channels, the patch-clamp technique.	Panyi György
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9	11.05.	17	Flow cytometry and cell sorting	Rebenku István
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10	11.12.	19	Structural biology I: basic principles, molecular dynamics simulations, docking, structure prediction.	Nagy Péter
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11	2nd SCT Lectures 1-18, approx. 90% of the questions will focus on topics not included in the 1st SCT. Week11, 16 November			
	11.19.	21	Structural biology II: Raman scattering, Raman spectroscopy, special Raman applications.	Dóczy-Bodnár Andrea
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12	11.26.	23	Structural biology III: Nuclear magnetic resonance (NMR) phenomenon, basics of NMR spectroscopy.	Dóczy-Bodnár Andrea
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13	12.03.	25	Electron microscopy. X-ray crystallography.	Nizsalóczki Enikő
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14	12.10.	27	Sedimentation methods, electrophoresis, mass spectrometry.	Szántó G. Tibor
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