Biomolekylers struktur och dynamik
Course Code:
GU: KEM360 Structure and dynamics of biomolecules
Chalmers: KBB058 Structure and dynamics of biomolecules

Course literature

General overview of the techniques: Methods in Molecular Biophysics Nathan R. Zaccai, Igor N. Serdyuk, Joseph Zaccai Cambridge University Press (2017) ISBN: 9781107056374
Recommended chapters: Part E, Part F2-2.6.5, Part G, Part H, Part J

Further readings:
X-ray crystallography: Crystallography Made Crystal Clear: A Guide for Users of Macromolecular Models. Gale Rhodes, Academic Press (2006) ISBN:978-0-12-587073-3
Recommended chapters: 3-9

General overview of the techniques: Wilson, Keith (Ed.). (2010). Principles and techniques of biochemistry and molecular biology. (7. ed.). Cambridge: Cambridge University Press. ISBN: 9780521731676
Recommended chapters: 8.3, 13.1-2, 13.4-8, 18.2-18.3

Teachers:
MB = Martin Billeter
BB = Björn Burman
VO = Vladislav Orekhov
RN = Richard Neutze
JH = Johanna Höög
GK = Gergely Katona
GB = Gisela Bränden
FS = Florian Schmitz
VA = Viktor Ahlberg Gagner
DZ = Davide Zabeo
JC = Jacob Croft

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Schedule

Date	Time	Location	Lecture	Teacher
Tue. Nov. 5	08:00 – 10:00	1411, Medg 11	Course introduction, roll call	RN
Tue. Nov. 5	10:00 – 12:00	1411, Medg 11	XTAL: Protein crystallography & crystallization.	RN
Wed. Nov. 6	08:00 – 10:00	2409E, N Wedel	XTAL: Symmetry & space groups; Vector algebra.	RN
Wed. Nov. 6	13:00 – 17:00	2409E, N Wedel	Introduction to protein crystallization and electron microscopy lab design	FS, VA
Fri. Nov. 8	10:00 – 12:00	2419E, F Andreasson	FT: Complex numbers & Fourier transforms.	RN
Mon. Nov. 11	13:00 – 15:00	NMR center	Application: Structural biology of receptors	RN
Tue. Nov. 12	08:00 – 10:00	1412, Medg 11	XTAL: X-ray scattering.	RN
Tue. Nov. 12	10:00 – 12:00	2409E, N Wedel	XTAL: X-ray diffraction.	RN
Wed. Nov. 13	13:00 – 17:00	Lundberg Computer Lab	FT: Fourier Transform lab	FS, VA
Thu. Nov. 14	13:00 – 15:00	Lundberg Computer Lab	FT: Flipped classroom on Fourier Transform	RN
Fri. Nov. 15	08:00 – 10:00	1411, Medg 11	XTAL: Solutions to the phase problem.	RN
Fri. Nov. 15	10:00 – 12:00	1411, Medg 11	XTAL: Phase improvement & structural refinement.	RN
Mon. Nov. 18	10:00 – 12:00	NMR center	Application: Flipped classroom on receptors	RN
Tue. Nov. 19	10:00 – 12:00	2419E, F Andreasson	EM: Introduction to electron microscopy	JH
Wed. Nov. 20	08:00 – 10:00	NMR center	EM: Applications of electron microscopy	JH
Wed. Nov. 20	10:00 – 12:00	1412 Medg 11	Application: Flipped classroom on Cryo-electron microscopy and cell biology	JH
Wed. Nov. 20	13:00 – 17:00	Lundberg Course Lab	Protein crystallization	FS, VA
Thu. Nov. 21	13:00 – 17:00	Lundberg Computer Lab	X-Ray Processing	FS, VA
Fri. Nov. 22	08:00 – 10:00	1412, Medg 11	Application: X-ray free electron lasers: Time-resolved X-ray diffraction studies of energy transducing proteins.	RN
Fri. Nov. 22	10:00 – 12:00	2409E N Wedel	NMR: Introduction and concepts	MB
Mon. Nov. 25	08:00 – 17:00	Lund	Visit to MaxIV BioMAX beamline	VA, FS
Tue. Nov. 26	08:00 – 10:00	1412, Medg 11	NMR: Resonance assignments and structure	MB
Tue. Nov. 26	10:00 – 12:00	2419E, F Andreasson	NMR: Data and their analysis	MB
Wed. Nov. 27	08:00 – 10:00	1412, Medg 11	NMR: Selected protein experiments; ligand screening	MB
Wed. Nov. 27	10:00 – 12:00	NMR center	Application: Flipped classroom on Cryo-EM	JH
Wed. Nov. 27	13:00 – 17:00	Lundberg Computer Lab	X-Ray Model building	FS, VA
Thu. Nov. 28	13:00 – 17:00	NMR lecture hall	NMR Laboratory	MB

Fri. Nov. 29	08:00 – 10:00	1412, Medg 11	Application: Protein characterization	BB
Fri. Nov. 29	10:00 – 12:00	1412, Medg 11	NMR: Relaxation and Dynamics	VO
Mon Dec 2	08:00 – 10:00	2303, Medg 9C	Application: Motors proteins and cytoskeleton in central nervous system	GK
Tue. Dec. 3	10:00 – 12:00	1412, Medg 11	SAXS: Small angle X-ray scattering	GK
Tue. Dec. 3	13:00 – 17:00	EM lab, room 1155	Electron microscopy laboratory, Group A	DZ,JC
Wed. Dec. 4	10:00 – 12:00	NMR center	SBDD: Role of structure in drug-design	GB
Wed. Dec. 4	13:00 – 17:00	EM lab, room 1155	Electron microscopy laboratory, Group B	DZ,JC
Thu. Dec. 5	13:00 – 17:00	EM lab, room 1155	Electron microscopy laboratory, Group C	DZ,JC
Fri. Dec. 6	10:00 – 12:00	2409E, N Wedel	Application: Flipped classroom on motor proteins	GK
Fri. Dec. 6	13:00 – 17:00	EM lab, room 1155	Electron microscopy laboratory, Group D	DZ,JC
Tue. Dec. 10	10:00 – 12:00	2303, Medg 9C	Application: Drug-design in practice	GB
Tue. Dec. 10	13:00 – 17:00	EM lab, room 1155	Electron microscopy laboratory, Group A	DZ,JC
Wed. Dec. 11	10:00 – 12:00	1412, Medg 11	Application: Flipped classroom on SBDD	GB
Wed. Dec. 11	13:00 – 17:00	EM lab, room 1155	Electron microscopy laboratory, Group B	DZ,JC
Thu. Dec. 12	13:00 – 17:00	EM lab, room 1155	Electron microscopy laboratory, Group C	DZ,JC
Fri. Dec. 13	13:00 – 17:00	EM lab, room 1155	Electron microscopy laboratory, Group D	DZ,JC
Fri. Jan. 17	**10:00 – 15:00**	Bjurström	**Examination**	

White: lecture, Blue: laboratory (obligatory), Green: project (GU students)