Stockholm University

Institutionen för biokemi och biofysik

Schedule for Biomolecular NMR, 15hp, Autumn 2017

Lecturers:

Jens Danielsson	*jens.danielsson@dbb.su.se*	*tel. 16 24 59*
Jozef Kowalewski	*jozef.kowalewski@mmk.su.se*	*tel. 16 23 76*
Lena Mäler	*lena.maler@dbb.su.se*	*tel. 16 24 48*
Astrid Gräslund	*astrid@dbb.su.se*	*tel. 16 24 50*

Practicals and calculations:
Sarah Leeb and Biao Fu

Place: XXX

Vecka	Time	Monday	Tuesday	Wednesday	Thursday	Friday
35 (28/8-1/9)	9:15 13:00	Intro (JD)	L1 (JK)	L2 (JK)	L3 (JK)	L4 (JK) Calc. 1
36 (4/9-8/9)	9:15 13:00	L5 (JK)	L6 (JK)	*13:00 lab1*		L7 (JK) Calc. 2
37 (11/9-15/9)	9:15 13:00	L8 (JK)	L9 (JK) Calc. 3	L10 (JK)		*13:00 lab2*
38 (18/9-22/9)	9:15 13:00	L11 (LM)	L12 (LM) Calc. 4	L13 (LM)		
39 (25/9-29/9)	9:15 13:00	*L14 (LM)*	L15 (JD)	L16 (JD) Calc 5	L17 (JD)	13:00 lab3
40 (2/10-6/10)	9:15 13:00	13:00 lab4		L18 (JD)	L19 (JD)	13:00 *lab5*
41 (9/10-13/10)	9:15 13:00	L20 (JD)	L21 (JD) Calc. 6	L22 (JD)	13:00 lab6	
42 (16/10-20/10)	9:15 13:00	L23 (AG)		Recap		
43 (23/10-27/10)	9:15 13:00	Literature pres.		Recap		**Exam** 9.00-14.00

Literature:
J. Keeler, Understanding NMR Spectroscopy, 1:st edition, 2006, or 2nd ed 2010.
Handouts

Practical information
1) Practical labs are preceded by a short test.
2) Lectures are normally between 9.15 and 12.00
3) Calculations and labs start at 13:00.
4) Literature projects are presented orally on 21/10

Practicals (preliminary):

1. Basic NMR **Basic Ft NMR, setting up an experiment**
2. 2D NMR **Homo- and heteronuclear correlation spectroscopy**
3. Diffusion **PFG-Diffusion**
4. Assignment **Assignment strategies**
5-6. Relaxation **Relaxation and dynamics**

Contents of lectures

Lecture	Contents	Chapter in Keeler's book
L1	Basics	1-2
L2	Energy levels and spectra	3
L3	The vector model	4
L4	Fourier transformation	5
L5-L6	Quantum mechanics of one spin	6
L7-L8	Product operators	7
L9-L10	Two-dimensional NMR	8
L11-L13	Relaxation and motion	9+handouts
L14	NOESY and chemical exchange	9
L15	Intro Bio-molecular NMR	handouts
L16	Protein production and labeling strategies for biomolecular NMR	
L17	Multidimensional NMR	handouts
L18-L19	Structure and dynamics of proteins	handouts
L20	Interactions and binding	handouts
L21-L22	Time-optimizing and applications thereof	handouts
L23	Introduction to EPR	
L24	Extra time	