

## Advanced NMR Course VT2016 (15Hec)

The course starts with five weeks of NMR basic training. The laboratory part of the course consists of instrument practice on standard samples in groups of two to three persons using Agilent and/or Bruker spectrometers. In addition, each participant will perform and present a project on defining the full structure of a small molecule characterization. For these projects, students may use their own suitable samples. Assessment of the students consists of three parts: written lab reports, written exam, and project presentation. All three parts need to be fulfilled in order to get credit points for the course.

**Course organizers:** Vladislav Orekhov, Mate Erdelyi, Göran Karlsson, and Martin Billeter

**Registration:** via e-mail to [Vladislav.Orekhov@nmr.gu.se](mailto:Vladislav.Orekhov@nmr.gu.se) before Feb 10. Number of places is limited and preference is given to earlier applications. In the application letter, please shortly describe your motivation for attending the course and your background in the related disciplines, e.g. chemistry, structural biology, and physics.

**Course literature:** Timothy DW Claridge *High-Resolution NMR Techniques in Organic Chemistry* (Elsevier)

**Information and Updates** about the course can be found at <http://nmr.gu.se/english/courses>

**Course Teachers:** (Swedish NMR Center and Dept. Chemistry and Molecular Biology, GU)

MB – Martin Billeter

DB – Diana Bernin

UB – Ulrika Brath

ME – Mate Erdelyi

GK – Göran Karlsson

DM – Daniel Malmodin

MM – Maxim Mayzel

CP – Cecilia Persson

VO – Vladislav Orekhov

## Course program

All lectures, laboratories, and seminars are located at the Swedish NMR Centre, Medicinareg 5c.

Lectures, as listed below, are given normally from 10 am to 12 am.

There is one lab per week, which requires about half of the day and is taken on Tuesday or Wednesday. The labs start at 13:00 on Tuesdays and at 8:30 am on Wednesdays.

Seminars are held at 2 pm, unless different specific time is given below.

### v. 9

1/3, Lecture VO: NMR Basics

1/3 and 2/3, Lab

4/3, Seminar

### v. 10

8/3 Lecture VO: Spectrometer, Relaxation, and Signal Processing

8/3 and 9/3, Lab

11/3, Seminar

### v. 11

15/3 Lecture MB: Introduction to 2D NMR

15/3 and 16/3 Lab

18/3, Seminar

**v. 12**

22/3 Lecture GK: Heteronuclear correlation

22/3 and 23/3, Lab

24/3, Seminar

**v. 13**

29/3 Lecture ME: Nuclear Overhauser Effect

29/3 and 30/3, Lab

1/4, Seminar

**v. 14**

5/4 Lecture DB: Diffusion NMR

5/4 and 6/4, Lab

8/4, Seminar

**v. 15**

12/4 Lecture ME: Spin-systems and dynamic exchange, spectrum prediction

12/4 and 13/4, Lab

14/4, Seminar ME:

**v. 16**

19/4 Lecture ME: Oriented samples in liquids

19/4 and 20/4, Lab

22/4, Seminar ME:

**v. 18**

*3/5 Examination*

**v. 22**

*2/6-3/6 Presentation of the individual projects (15/6 last day to submit the report)*