Sveriges lantbruksuniversitet
Swedish University of Agricultural Sciences

SLUkurs

Syllabus

PNS0210 Applied biomolecular NMR spectroscopy, 2.0 credits

Syllabus approved

2020-10-14

Subjects

Chemistry

Education cycle

Third cycle

Grading scale

Pass / Failed
The requirements for attaining different grades are described in the course assessment criteria which are contained in a supplement to the course syllabus. Current information on assessment criteria shall be made available at the start of the course.

Language

English

Prior knowledge

The course is primarily intended for PhD students within the SLU Graduate School Focus on Food and Biomaterials, but will be open for other interested PhD students and researchers if space allows.
The course does not require any previous experience in NMR spectroscopy.

Objective, including learning outcomes

The course gives an overview about NMR strategies that can be performed on biomolecules, such as proteins, peptides, carbohydrates, lipids, and small metabolites. The main objective is to provide the students with knowledge about possibilities and limitations with NMR spectroscopy. The course is focused on the practical performance and outcome of NMR experiments and just gives a very brief introduction to the theoretical principals.

Content

The course is divided into two modules: A theoretical overview of NMR applications for different biomolecules and then practical exercises in the NMR lab.
The first module includes lectures in NMR applications on proteins, peptides, carbohydrates, nucleic acids, lipids and small metabolites by experts in the different areas. It also contains a brief introduction to semi-solid (HR-MAS) and solid-state (CP-MAS) NMR.
The second module is based on a short NMR project that should be related to a research project where the PhD student is involved. The student defines the project and prepares samples as well as NMR experiments under supervision. The project is finally presented in a written report and at a seminar.
Attendance at all scheduled activities is obligatory.
Learning outcomes
After completing the course the student shall be able to:
- Propose suitable strategies to analyze a given sample by NMR spectroscopy.
- Perform simple NMR experiments under supervision.
- Discuss NMR strategies that are brought up in the course in relation to possible applications from his/her own research projects.

Requirements for examination

Attendance at all scheduled activities and approved individual report on the NMR project.

Additional information

The course extends over two weeks. During the first week, four days will be devoted to lectures and to a demonstration of the NMR facility. The second week starts with three days of practical training, where each student has about half a day of

NMR time. After one day of preparing a report on the results, the final day is devoted to a seminar where the students present the outcomes of the projects.

Responsible department

Department of Molecular Sciences