

Course on neutron scattering: Reflectivity and GISANS

The didactic idea behind the course is based on using the scientific literature as well as hands on training. Besides the knowledge on scattering techniques, the students will obtain training and knowledge on transferable skills such as: Pitching scientific ideas in written and verbal form, metaphysics (meta-analysis) as well as preparing and giving talks. By having a break during the mid day allows the students to digest the morning session and to become ready for the afternoon session.

Topic oriented syllabus. Reflectometry, off-specular scattering, GISANS, magnetism, hydrogen in materials, soft matter, rheology, dynamics, phase transitions, designing experiments, evaluation of data, statistical analysis, fitting data and simulations of data.

Content:

Preparatory work.

1. Downloading and installing appropriate software on personal computer. Obtaining first orientation of how to use the software by trial and error utilising instructions.
2. Download and read selected published papers on the use of the techniques involved. Write a short summary of the range of use including resolution, sensitivity etc. Maximum number of pages is defined.

On site

1. Participate in lectures (see below)
2. Use simulation and fitting programs (obtaining hands on experience)
3. Participate through discussions and analysis

Hands in

1. Proposal for an experiment including simulations and statistical analysis¹
2. Popular science description of neutron related experiment/results (1 page).

Preliminary schedule

	8-10	10-12	14-16	16-18
Introduction			Introduction & concepts	Introduction & concepts
Reflectometry	Concepts reflectometry	Hands on & tutorials	Hands on & tutorials	Scientific examples
Gisans	BornAgain	Using BornAgain	Using BornAgain	Scientific examples
Statistical analysis	Statistical analysis	Using statistical analysis	Break	Metaphysics
Reflectometry/ Gisans	Reflectometry	Off-specular Reflectometry	GISANS	Practical aspects
Combining it all		Selling your case		

¹ Proposal: (max two pages), Abstract, Short introduction, Description of state of the art, Explain how and what you want to do, Explain why you need this facility.