

## SCIENTIFIC AND METHOD MODULES

Module name	Magnetic resonance - Fundamentals and Applications		
Number	2011-M06		
Aims	Magnetic resonance, in particular NMR, is one of the very few local probes of bulk matter with applications in almost all natural sciences. Leipzig has a great tradition in applying and developing magnetic resonance in various areas. The powerful spectroscopic insight from magnetic resonance requires, however, a special knowledge of its methods, techniques, and hardware. Therefore, basic courses in magnetic resonance will be provided that lay the foundation for its application. Due to the exceptional breadth of applications, advanced courses will focus on current research needs.		
Basics	Magnetic resonance for the investigation of materials, which are the focus of the Graduate School, and their properties		
Contents	Basic principles of NMR. NMR of liquids and of solids as basic analytical tool. Advanced methods (e.g., in biological systems, quantum solids, surfaces). Hardware development for special applications.		
Methods	Given the great expertise in magnetic resonance, interdisciplinary teaching (already practiced in Leipzig) will provide first-hand knowledge from leading experts in various fields. The teaching will also profit from a long-standing experience with GDCh courses where we combine lectures on various subjects with concrete experimental training at instruments, which provides hands-on education in complicated methods.		
Туре	Two-day block course/ yearly recurrence with modification		
Date (month/year)	September 6 to 7 (see schedule)		
Time	9.30 – 16.00		
Work load	15 hours presence/ 45 hours self-study		
Examination	Written, Friday, 23.9.2010, 08:15, SR 014		
Credit points	2		
Responsible scientists	Berger, Findeisen		
International guest lecturers	none		
Industrial partners	none		
Recommendations	M. Levitt, Spin Dynamics, VCH-Wiley		
for literature, e-	S. Berger, S. Braun, 200 and More NMR Experiments, VCH-Wiley		
learning	C. P. Slichter, Principles of Magnetic Resonance (Springer Verlag)		

## SCHEDULE

Time L	ecturer	Program	Location	
Tuesday, 06.09.11				
09.30-11.00	Basic Physics of NMR	Findeisen	SR 101	
11.30-13.00	Introduction into 1H and 13C NMR	Berger	SR 101	
14.30-16.00	1D NMR Practical on two to three instruments			
Wednesday, 07.09.11				
09.30-11.00	The organic Set of NMR spectra	Findeisen	SR 101	
11.30-13.00	Structure Elucidation of Natural Products	Berger	SR 101	
14.30-16.00	2D NMR Practical on two to three			
	instruments			
Friday, 23.09.11				
08.15-09.45	Written Examination		SR 014	

Didactic elements:

Lecture, discussions, presentations. practical exercises, etc.

Expected performance: Active participation in discussions, presentations, etc.