

Practical Course M I					
Identification number	Workload	Credits	Term of studying	Frequency of occurrence	Duration
MN-P-PraktMI	180 h	6 CP	1 st Semester	Continually upon consultation, every semester	1 Semester
1	Type of lessons		Contact times	Self-study times	Intended group size
	a) Preparation for experiments		---	45 h	Max 3 students
	b) Perform experiments		15 h	---	
	c) Analysis and Report		---	95 h	
	d) Exam		1 h	24 h	
2	Aims of the module and acquired skills				
	The course consists of advanced experiments introducing into important subfields of contemporary experimental physics. The students gain insight in relevant contemporary research by conducting experiments independently. Content of the course includes determination of experimental quantities and their errors, modern experimental physics methods, and the written presentation of scientific results.				
3	Contents of the module				
	Advanced methods of performing physics experiments are introduced by setting up and conducting four experiments. The experiments introduce students to modern physics research. The experiments have to be selected from one category group out of atomic physics, solid state physics, nuclear physics, or biophysics. Experiments are selected from the catalogue of laboratory set-ups offered.				
4	Teaching / Learning methods				
	After registration the participants will work in small subgroups of at most 3 students. Before carrying out an experiment, the student shall demonstrate to have acquired background knowledge for the experiments. For each experiment, the preparation, the measured results and the data analysis have to be documented in written form. The selected subfield of the experiments should be motivated and guided by the main focus of the selected master research fields.				
5	Requirements for participation				
	Fundamentals at the level of the bachelor courses in physics				
6	Type of module examinations				
	In the categories molecular and astrophysics, solid state physics, biophysics, and nuclear physics the successful preparation, measurement and analysis of each experiment is certificated, but not graded. Failed experiments may be repeated twice.				
7	Requisites for the allocation of credits				
	Four completed experiments are required to be admitted to an oral exam, which determines the grade of the module.				
8	Compatibility with other curricula and soft skills				
	As elective subject in other M.Sc. programs				
	Teamwork, collaboration capability, time management				

9	Significance of the module mark for the overall grade The weight of the module is $6/111 \approx 5.4\%$.
10	Module coordinator F. Lewen, T. Lorenz, B. Maier, P. Reiter
11	Additional information Alternatively to the categories listed above, experiments in particle physics may be performed in Bonn and credited in Cologne. In this case, the module examinations follow the regulations of Bonn University. Version: 05.06.2015 HK