

PHY-M-VS 06

Effective WS 2011/12

1. Module title:		Introduction to Control Engineering, Data Acquisition and Digital Signal Processing			
2. Field / responsibility of:		Physics / the department, the Dean of Studies			
3. Module contents:		Technical data processing has become ubiquitous in our lives, from the automotive sector to modern communication technology. This course deals with common problems, such as: A machine is supposed to be controlled – or, rather, regulated – from a computer. Measurement signals are obtained, converted, amplified and transferred as digital information to a computer. The analysis of these signals is usually done through digital signal processing. Theoretical knowledge is deepened by means of practical exercises.			
4. Qualification objectives of the module / competencies to be acquired:		This course provides an introduction to all important areas of control engineering, data acquisition and digital signal processing, and therefore optimally prepares students for their final experimental project as well as for a career in a technical field.			
5. Prerequisites for participation:					
a) Recommended knowledge:		Knowledge of any programming language			
b) Prerequisite courses:		None			
6. Module can be used for:		M.Sc. (and B.Sc.) in Physics, Nanoscience, Computational Science, Teacher Training for Academic Secondary School, Teacher Training for Physics			
7. Module is offered:		On a yearly basis			
8. Module can be completed in:		1 semester			
9. Recommended semester of study:		1			
10. Overall module workload / number of credit points:		Workload: Total number of hours: 180 Allocation: Attendance: 4 credit hours Independent study (including exam preparation/ exam): 120 hours Credit points: 6			
The successful completion of all assignments listed in items 11 and 12 is a prerequisite for receiving the credit points mentioned in item 10.					
11. Module components:					
Nr.	Req./req. elective	Form of teaching	Subject area/topic	Credit hours	Coursework
PHY-M-VS 06.1	Compulsory	Lecture Practical course	Control engineering, data acquisition and digital signal processing	4	Successful completion of the practical exercises across all course topics; project work
12. Module exam:					
Nr.	Competence / topic	Type of exam	Duration	Time / notes	Weighting for module grade