

PHY-M-VF 4

Effective WS 2011/12

1. Module title:		Semiconductor Physics			
2. Field / responsibility of:		Physics / the faculty, the Dean of Studies			
3. Module contents:		<ul style="list-style-type: none"> • Introduction and overview • Electronic states and band structure • Doped semiconductors • Charge carrier statistics • Optical characteristics • Electrical transport • The p-n junction • The bipolar junction transistor • The metal-semiconductor contact • The field effect transistor (FET) • Heterostructures • Optoelectronics • New concepts 			
4. Qualification objectives of the module / competencies to be acquired:		Acquiring a fundamental knowledge of the key concepts and most important methods used in semiconductor physics. Experimental techniques as well as theoretical principles will be discussed. It is highly recommended to attend the module "Electronics" in addition.			
5. Prerequisites for participation:					
a) Recommended knowledge:		Solid-state physics, quantum mechanics I			
b) Prerequisite courses:		None			
6. Module can be used for:		MSc. in Physics, MSc. in Nanoscience, MSc. in Comp. Science; BSc. in Nanoscience, BSc. in Comp. Science			
7. Module is offered:		On a yearly basis			
8. Module can be completed in:		1 semester			
9. Recommended semester of study:		Minimum: 1			
10. Overall module workload / number of credit points:		Workload: Total number of hours: 240 Allocation: 1. Attendance: 4 credit hours 2. Independent study (including exam preparation/ exam): 180 hours Credit points: 8			
11. The module is successfully completed when the requirements below have been met.					
12. Module components:					
Nr.	Req./req. elective	Form of teaching	Subject area / topic	Credit hours	Coursework
PHY-M-VF 4 .1	Required elective	Lecture	Semiconductor physics	4	

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13. Module exam:					
Nr.	Competence / topic	Type of exam	Duration	Time / notes	Weighting for module grade
PHY-M-VF 4 .1	Semiconductor physics			Type of exam: Oral or written; duration: 20 min, or 105 min, 135 min or 210 min (if it consists of two parts); time: Lecture period to end of semester	1
14. Notes:					
Further information will be provided by the instructors at the beginning of the course.					