

PHY-M-VF 2

Effective WS 2010/11

1. Module title:	Infrared / Terahertz Physics
2. Field / responsibility of:	Physics / the faculty, the Dean of Studies
3. Module contents:	<ul style="list-style-type: none"> • Introduction and overview • Physical principles • Incoherent sources • Cosmic background radiation • Coherent sources • Classical vacuum electronic sources (Backward-wave oscillator, gyrotron etc.) • Free-electron lasers • Detectors • Optical components and methods • Spectroscopic methods • Conventional spectroscopy • Fourier spectroscopy • Magneto-spectroscopy • Spectroscopy in the time domain • Phenomena related to far-infrared high excitation • Photoelectric effects in the IR/THz range • Raman spectroscopy • Laser spectroscopy
4. Qualification objectives of the module / competencies to be acquired:	Acquiring a fundamental knowledge of the key concepts and most important methods used in infrared / terahertz physics. Experimental techniques as well as theoretical principles will be discussed.
5. Prerequisites for participation:	
a) Recommended knowledge:	Solid-state physics, semiconductor 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.	

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12. Module components:					
Nr.	Req./req. elective	Form of teaching	Subject area / topic	Credit hours	Coursework
PHY-M-VF 2 .1	Required elective	Lecture	Infrared / terahertz physics	4	
13. Module exam:					
Nr.	Competence / topic	Type of exam	Duration	Time / notes	Weighting for module grade
PHY-M-VF 2 .1	Infrared / terahertz physics	Oral	20 minutes	Time: Lecture period to end of semester	1
14. Notes:					
Further information will be provided by the instructors at the beginning of the course.					