## WYDZIAŁ FIZYKI UW

#### Field of study: Physics (Studies in English) 2-year second cycle programme, full-time Academic year: 2021/2022 Specialization: Physics of Condensed Matter and Semiconductor Nanostructures First year, semester 1 Total Verification of number effects Course name/ group of courses Type of course Number of hours of related to the **ECTS** course points Physics Laboratory, 2nd Level A1 laboratory 45 or Physics Laboratory, 2nd Level class 45 grade 5 2 Courses selected from the list lecture 45 exam: written 90 7 Statistical physics 45 exercises or oral Intellectual property and lecture/lecture entrepreneurship or Intellectual written and project 30/105 30/105 2/5 property and entrepreneurship exam/project with team project Introduction to solid state physics lecture 30 60 written exam 6 exercises 30 Selected specialization seminar 30 30 2 seminar grade First year, semester 2 Total Verification of number effects Course name/ group of courses Type of course Number of hours of related to the **ECTS** course points Introduction to Philosophy lecture 30 30 3 grade Low-dimensional systems lecture 30 written or oral 60 6 exercises 30 exam 3 Magnetism and superconductivity lecture written or oral 30 30 3 exam 4 Experimental methods in lecture written or 30 3 30 semiconductor physics oral exam Physics Laboratory, 3rd Level 120 120 12 laboratory grade 6 | Selected specialization seminar 30 30 2 seminar grade Other courses to be completed in the 1<sup>st</sup> and/or 2<sup>nd</sup> semester Verification Total of effects number Course name/ group of courses Type of course Number of hours related to of ECTS the course points Courses selected from the list written exam 60 60 6 Numerical analysis or grade General courses (OGUN)\* written exam 2 30 30 3 or grade

min.645 min.645

60

In total

<sup>\*</sup>in total 6 ECTS required within the duration of the programme, including 5 ECTS points unrelated to physical sciences, i.e. humanities and social sciences;

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### Specialization: Physics of Condensed Matter and Semiconductor Nanostructures

Course name/ group of courses   Type of course   Number of felects related to the course   Semiconductors   Semiconductor   Semiconductor   Semiconductor   Semiconductor   Seminar   Second year, semester 2   Second year, semester 2   Second year, semester 2   Second year, semester 2   Second year, seminar   S	Specialization: Physics of Condensed Matter and Semiconductor Nanostructures								
Course name/ group of courses  Type of course  Number of hours  Professional Services  Type of course  Number of hours  Number of hours  Professional Services  Professional Services  Professional Services  Professional Services  Proseminar Physics of Condensed Matter and Semiconductor  Second year, semester 2  Proseminar Physics of Condensed Matter and Semiconductor  Manostructures  Laboratory in condensed matter physics I  Proseminar Challenges of the modern times  Diluted magnetic semiconductors  Selected specialization seminar  Selecture  Diluted magnetic semiconductors  Laboratory in condensed matter physics II  Proseminar Challenges of the modern times  Diluted magnetic semiconductors  Selected specialization seminar  Laboratory in condensed matter physics II  Proseminar Challenges of the modern times  Diluted magnetic semiconductors  Professionar Seminar Semin		Se	cond year, sen	nester 1					
semiconductors exercise 30 00 exam 6  Bose-Einstein condensation and superfluidity 30 30 grade 2  Proseminar Physics of Condensed Matter and Semiconductor Nanostructures  Laboratory in condensed matter physics I  Proseminar Challenges of the modern times  Diluted magnetic semiconductors I ecture 30 30 30 grade 3  Selected specialization seminar 4  Laboratory in condensed matter physics I  Proseminar Challenges of the modern times 20 20 grade 2  Diluted magnetic semiconductors lecture 30 30 grade 5  Selected specialization seminar 4  Laboratory in condensed matter physics II  Other courses to be completed in the 1st and/or 2nd semester Verification of effects related to the course seminar 8  Total number of hours verification of effects related to the course points 9  Total number of hours verification of effects seminar 9  Selected specialization courses 75 75 grade 5  Selected specialization courses 80 80 80 grade) 3  Selected specialization courses 30 30 written exam or grade 9  General courses (OGUN)*  30 30 written exam or grade 9  Written or oral exam or grade 9  Written or oral exam or grade 9  Selected specialization courses 30 30 30 written exam or grade 9  Diluted magnetic semiconductors 9  Selected specialization seminar 9  Selected spe		Course name/ group of courses	Type of course			effects related to the	number of ECTS		
semiconductors exercise 30 00 exam 6  Bose-Einstein condensation and superfluidity 30 30 grade 2  Proseminar Physics of Condensed Matter and Semiconductor Nanostructures  Laboratory in condensed matter physics I  Proseminar Challenges of the modern times  Diluted magnetic semiconductors I ecture 30 30 30 grade 3  Selected specialization seminar 4  Laboratory in condensed matter physics I  Proseminar Challenges of the modern times 20 20 grade 2  Diluted magnetic semiconductors lecture 30 30 grade 5  Selected specialization seminar 4  Laboratory in condensed matter physics II  Other courses to be completed in the 1st and/or 2nd semester Verification of effects related to the course seminar 8  Total number of hours verification of effects related to the course points 9  Total number of hours verification of effects seminar 9  Selected specialization courses 75 75 grade 5  Selected specialization courses 80 80 80 grade) 3  Selected specialization courses 30 30 written exam or grade 9  General courses (OGUN)*  30 30 written exam or grade 9  Written or oral exam or grade 9  Written or oral exam or grade 9  Selected specialization courses 30 30 30 written exam or grade 9  Diluted magnetic semiconductors 9  Selected specialization seminar 9  Selected spe				00		.,,			
superfluidity 3 Selected specialization seminar seminar 30 30 grade 2  4 Proseminar Physics of Condensed Matter and Semiconductor Nanostructures 5 Laboratory in condensed matter physics I  Course name/ group of courses  Type of course  Number of hours  Proseminar Challenges of the modern times  Diluted magnetic semiconductors lecture  Diluted magnetic semiconductors lecture  Diluted magnetic semiconductors lecture  Laboratory in condensed matter physics II  Proseminar Challenges of the modern times  Seminar  Seminar  20 20 grade  2 written or oral exam  3 Selected specialization seminar  Laboratory in condensed matter physics II  Course name/ group of courses  Type of course  Number of hours  Number of hours  Number of effects related to the course of hours  Number of hours  Number of hours  Number of hours  Number of hours  Proseminar Challenges of the modern times  Total of practical in on grade  Number of hours  Seminar  30 30 grade  2 Diluted magnetic semiconductors  Number of effects related to the course of hours  Number of hours  Seminar  30 30 grade  2 Diluted magnetic semiconductors  Number of effects related to the course of hours  Seminar  30 30 grade  Diluted magnetic semiconductors  Number of effects related to the course of hours  Seminar  30 30 grade  Diluted magnetic semiconductors  Seminar  30 30 grade  Diluted magnetic semiconductors		semiconductors	exercise		60	exam	6		
4 Proseminar Physics of Condensed Matter and Semiconductor Nanostructures 5 Laboratory in condensed matter physics I  Course name/ group of courses  Type of course  Type of course  Number of hours  Proseminar Challenges of the modern times  Diluted magnetic semiconductors  Selected specialization seminar workshop  Laboratory in condensed matter physics II  Proseminar Challenges of the modern times  Seminar  Seminar  20  20  grade  2  grade  2  Diluted magnetic semiconductors  Lecture  30  30  written or oral exam grade  2  Laboratory in condensed matter physics II  Other courses to be completed in the 1st and/or 2nd semester  Course name/ group of courses  Type of course  Type of course  Number of hours  Number of hours  Number of hours  Number of hours  Total number of effects related to the course related to the course  Semester  Verification of effects pass/fail (no grade)  1 Proseminar Challenges of the modern times  Selected specialization ourses  Type of course  Number of hours  Number of hours  Number of hours  Semester  Verification of effects pass/fail (no grade)  1 Total number of effects related to the course  Semester  Verification of effects pass/fail (no grade)  3 Selected specialization courses  Semester  Verification of effects pass/fail (no grade)  1 Total number of effects related to the course  Semester  Verification of effects pass/fail (no grade)  3 Selected specialization courses  3 Selected specialization		superfluidity		30	30		3		
Matter and Semiconductor Nanostructures  Laboratory in condensed matter physics I  Course name/ group of courses  Type of course  Type of course  Number of hours  Number of hours  Proseminar Challenges of the modern times  Diluted magnetic semiconductors  Selected specialization seminar seminar workshop physics II  Other courses to be completed in the 1st and/or 2nd semester  Type of course  Number of hours  Verification of effects related to the course  Proseminar Challenges of the modern times  Selected specialization seminar seminar 30 30 grade 2  Laboratory in condensed matter physics II  Other courses to be completed in the 1st and/or 2nd semester  Course name/ group of courses  Type of course  Number of hours  Verification of effects related to the course related to the course semester  Verification of effects related to the course with the seminar or grade semester  Type of course and physics II  Team project ** project 75 75 grade 5  Work placement 80 80 pass/fail (no grade) 3  Selected specialization courses  Selected specialization courses 30 30 written exam or grade written exam or grade written exam or grade or grade or grade and or grade or gr	3	Selected specialization seminar	seminar	30	30	grade	2		
Second year, semester 2   Total		Matter and Semiconductor Nanostructures		30	30	grade	3		
Course name/ group of courses  Type of course  Number of hours  Verification of effects related to the course  Proseminar Challenges of the modern times  Diluted magnetic semiconductors  Selected specialization seminar  Laboratory in condensed matter physics II  Course name/ group of courses  Type of course  Course name/ group of courses  Type of course  Number of hours  Type of course  Number of hours  Number	5		workshop	120	120	grade	10		
Course name/ group of courses  Type of course  Number of hours  Verification of effects related to the course  Proseminar Challenges of the modern times  Diluted magnetic semiconductors  Selected specialization seminar  Laboratory in condensed matter physics II  Course name/ group of courses  Type of course  Course name/ group of courses  Type of course  Number of hours  Type of course  Number of hours  Number		Second year, semester 2							
modern times    20   20   grade   2		Course name/ group of courses	Type of course			effects related to the	number of ECTS		
modern times    20   20   grade   2									
3 Selected specialization seminar seminar seminar 30 30 grade 2 4 Laboratory in condensed matter physics II  Other courses to be completed in the 1st and/or 2nd semester  Course name/ group of courses  Type of course  Number of hours  Number of hours  Team project ** project 75 75 grade 5  Work placement  Seminar 30 30 grade 2  19 pass/fail (no grade)  Verification of effects related to the course points  Total number of ECTS points  Number of hours  Semester  Verification of effects related to the course points  Number of semester  Verification of effects related to the grade of the points  Selected specialization courses  Selected specialization courses  30 30 written exam or grade  General courses (OGUN)*  In total	1		seminar	20	20	grade	2		
4 Laboratory in condensed matter physics II  Other courses to be completed in the 1st and/or 2nd semester  Course name/ group of courses  Type of course  Number of hours  Number of hours  Number of hours  Total number of effects related to the course  Verification of effects related to the course  Total number of ECTS points  Team project **  Work placement  Selected specialization courses  30 30 written exam or grade  General courses (OGUN)*  In total	2	Diluted magnetic semiconductors	lecture	30	30		3		
Other courses to be completed in the 1st and/or 2nd semester  Course name/ group of courses  Type of course  Number of hours  Number of hours  Type of course  Number of hours  Type of course  Type of course  Number of hours  Type of course  Number of hours  Total number of effects related to the course  Yerification of ECTS points  Total number of project selected to the course  Type of course  Selected to the course selected to the course  Type of course  Type of course  Number of hours  FCTS points  Selected specialization courses  Selected specialization courses  Type of course  Type of course  Number of effects related to the course selected to the course  Type of course  Number of hours  FCTS points  Selected specialization courses  Selected specialization courses  Selected specialization courses  Type of course  Number of effects  FCTS points  Type of course  Type of course  Number of and of effects  FCTS points  Selected specialization selected to the course and or grade  Type of course and or grade  Selected specialization courses  Type of course  Number of effects  FCTS points  Type of course and or grade  Selected to the course and or grade  Type of course and or grade  Type o	3	Selected specialization seminar	seminar	30	30	grade	2		
Course name/ group of courses  Type of course  Number of hours  Number of hours  Project 75 75 grade 5  Work placement  Selected specialization courses  General courses (OGUN)*  Total number of effects related to the course  Number of effects related to the grade of ECTS points  Total number of effects related to the course  80 80 pass/fail (no grade)  3 written exam or grade  3 written exam or grade  In total	4		workshop	210	210		19		
Course name/ group of courses  Type of course  Number of hours  Number of hours  Project 75 75 grade 5  Work placement  Selected specialization courses  General courses (OGUN)*  Total number of effects related to the course  Number of effects related to the grade of ECTS points  Total number of effects related to the course  80 80 pass/fail (no grade)  3 written exam or grade  3 written exam or grade  In total									
2 Work placement  80 80 pass/fail (no grade)  3 Selected specialization courses  30 30 written exam or grade  4 General courses (OGUN)*  30 30 written exam or grade  31 or grade  32 or grade  33 or grade  34 or grade  35 or grade  36 or grade  36 or grade  37 or grade  38 or grade  39 or grade  30 or grade  30 or grade				Number of		Verification of effects related to the	number of ECTS		
2 Work placement  80 80 pass/fail (no grade)  3 Selected specialization courses  30 30 written exam or grade  4 General courses (OGUN)*  30 30 written exam or grade  31 or grade  32 or grade  33 or grade  34 or grade  35 or grade  36 or grade  36 or grade  37 or grade  38 or grade  39 or grade  30 or grade  30 or grade		T		75	75		-		
3 Selected specialization courses 3 Written exam or grade 3 Selected specialization courses 4 General courses (OGUN)* 3 Selected specialization courses 3 Selected specialization courses 4 Selected specialization courses 4 Selected specialization courses 5 Selected specialization courses 6 Selected specialization courses 7 Selected specializatio		• •	project	75	75		5		
4 General courses (OGUN)*  30 or grade  30 written exam or grade  31 or grade  32 or grade  33 or grade  34 or grade  35 or grade  36 or grade  36 or grade  37 or grade  38 or grade		•		80	80	grade)	3		
In total min. min. or grade		•		30	30	or grade	3		
	4	, ,					3		
		In total					60/65		

<sup>\*</sup>in total 6 ECTS required within the duration of the programme, including 5 ECTS points unrelated to physical sciences, i.e. humanities and social sciences;

<sup>\*\*</sup> Team project can be completed as a separate course or within a course if the course coordinator requires team work