

# Programme of Studies Diplom Course Physics of 01.06.2001

17.09.2001

Sem	Major Subject Physics	Minor	Totals						
<b>Foundation Studies</b>							V	E/S	P
1	Physics I (4+2), LN <sup>1)</sup> Mechanics, Thermodynamics		Mathematical Supplement (2), recommended	Advanced Mathematics I (6+3), LN <sup>2)</sup>	Astron., Chemistry, Comput..Sc., (2+1)	14	6		
2	Physics II (4+2), LN <sup>1)</sup> Electromagnetism	A-Lab I (4), LN	Intro. Theoretical Physics (2), recommended	Advanced Mathematics II (6+3), LN <sup>2)</sup>	Astron., Chemistry, Comput. Sc., (2+1)	14	6	4	
3	Physics III (3+1) Optics & Wave Mechanics	A-Lab II (4), LN	Theoretical Physics I (4+2), LN	Analysis III (4+2), LN <sup>2)</sup>		11	5	4	
<b>4 Vordiplom-Exams (before the end of the 4. semester)</b>							<b>64</b>		
Experimental Physics (3 LN)		Theoretical Physics (1 LN)	Mathematics (2 LN)	Minor (1 LN)					
<b>Advanced Studies</b>									
4	Intro. Solid State Physics & Electronics (4+2)	E-Lab (3), LN	Theoretical Physics II (6+3), LN	Advanced Mathematics Course (4+2)), recommended		10	5	3	
5	Atoms, Molecules & Light (3+2), LN <sup>3)</sup>	Nuclei&Hadrons (3+2), LN <sup>3)</sup>	Theoretical Physics III (4+2), LN <sup>4)</sup>	Seminar (2), LN <sup>5)</sup>	Lectures (4)	14	6		
6	Condensed Matter (3+2), LN <sup>3)</sup>	Particles (3+2), LN <sup>3)</sup>	Theoretical Physics IV (4+2), LN <sup>4)</sup>	Advanced Lab I (8), LN	Lectures (4)	14	4	8	
<b>Specialist/Graduate Courses</b>									
7-8	Lectures in specialisation: Theoretical, Experimental, Applied or Astro Physics (20), 2/3 from specialisation, 1 LN		Seminar (Specialisation) (2), LN <sup>5)</sup>	Advanced Lab II (8), LN		22		8	
<b>4 Diplom exams</b>							<b>94</b>		
Experimental Physics, (4-5 LN) <sup>6)</sup>		Theoretical Physics (2 LN)	Specialisation (1-2 LN) <sup>6)7)</sup>		Minor Subject				
9-10	<b>Diplom Thesis (3&amp;9 Mon.)</b>								

- 1) Foundation Studies: 1 Credit (Leistungsnachweis LN) for admission to the A-Lab
- 2) Foundation Studies and Mathematics: 2 credit out of 3 semesters.
- 3) Advanced experimental physics : 1 credit out of 4 lectures offered
- 4) Advanced theoretical physics: 1 credit from Theoretical Physics II und 1 credit from Theoretical Physics III or IV
- 5) Seminars: 1 credit from advanced or graduate courses
- 6) A total of 8 credits is required from the advanced studies programme.
- 7) Minor subject and specialization must not be identical.

# ECTS Points allocated to the Physics Diplom course at the Rheinische Friedrich-Wilhelms-Universität

## Basic courses

1 <sup>st</sup> Semester <sup>1</sup>				
Physics I (Mechanics, Thermodynamics) with exercises  (4 + 2 SWS <sup>2</sup> ) <b>6 + 6 ECTS Points</b>		Mathematical supplement ( <i>Recommended</i> )  (2 SWS) <b>4 ECTS Points</b>	Mathematics I  (6 + 3 SWS) <b>10 + 8 ECTS Points</b>	Astronomy, Chemistry or Informatics  (2 + 1 SWS) <b>4 + 2 ECTS Points</b>
2 <sup>nd</sup> Semester				
	Laboratory course	No lectures between semesters		
Physics II (Electromagnetism) with exercises (4 + 2 SWS) <b>6 + 6 ECTS Points</b>	Part I  (3 SWS) <b>6 ECTS Points</b>	Introduction to Theoretical Physics ( <i>Recommended</i> ) (2 SWS) <b>4 ECTS Points</b>	Mathematics II  (6 + 3 SWS) <b>10 + 8 ECTS Points</b>	Astronomy, Chemistry or Informatics (2 + 1 SWS) <b>4 + 2 ECTS Points</b>
3 <sup>rd</sup> Semester				
	Laboratory course	No lectures between semesters		
Physics III (Optics and wave mechanics) with exercises  (3 + 1 SWS) <b>5 + 3 ECTS Points</b>	Part II  (5 SWS) <b>10 ECTS Points</b>	Theoretical Physics I (Mechanics, Electro- and Magnetostatics) with exercises (4 + 2 SWS) <b>8 + 7 ECTS Points</b>	Calculus III with exercises  (4 + 2 SWS) <b>6 + 6 ECTS Points</b>	
<b>4 Vordiplom exams<sup>3</sup> (before the end of the 4<sup>th</sup> semester)</b>				

<sup>1</sup> The number of ECTS credits per semester can be higher than 30, since not all lectures and exercises are obligatory.

<sup>2</sup> SWS = Semesterwochenstunde = hours of weekly instructions

<sup>3</sup> The exams can be taken during the studies before the end of the 4th (Vordiplom) or the 8th semester (Diplom), respectively.

## Advanced courses

4 <sup>th</sup> Semester				
No lectures between semesters				
Introduction to solid state physics and electronics with exercises  (4 + 2 SWS) <b>6 + 6 ECTS Points</b>	Electronics Laboratory course  (3 SWS) <b>6 ECTS Points</b>	Theoretical Physics II (Quantum theory, Electrodynamics) with exercises (6 + 3 SWS) <b>10 + 8 ECTS Points</b>	Mathematics IV ( <i>Recommended</i> )  (4 + 2 SWS) <b>6 + 6 ECTS Points</b>	
5 <sup>th</sup> Semester				
No lectures between semesters				
Atoms, molecules and light with exercises  (3 + 2 SWS) <b>5 + 5 ECTS Points</b>	Nuclei and Hadrons with exercises  (3 + 2 SWS) <b>5 + 5 ECTS Points</b>	Theoretical Physics III (Quantum theory II) with exercises (4 + 2 SWS) <b>8 + 7 ECTS Points</b>	Seminar  (2 SWS) <b>6 ECTS Points</b>	Lectures  (4 SWS) <b>8 ECTS Points</b>
6 <sup>th</sup> Semester				
No lectures between semesters			Advanced Laboratory course Part I  (8 SWS) <b>15 ECTS Points</b>	Lectures  (4 SWS) <b>8 ECTS Points</b>
Condensed matter with exercises  (3 + 2 SWS) <b>5 + 5 ECTS Points</b>	Elementary particles with exercises  (3 + 2 SWS) <b>5 + 5 ECTS Points</b>	Theoretical Physics IV (Thermodynamics and statistical physics) with exercises (4 + 2 SWS) <b>8 + 7 ECTS Points</b>		
7 <sup>th</sup> + 8 <sup>th</sup> Semester				
No lectures between semesters			Advanced Laboratory course Part II (8 SWS) <b>15 ECTS Points</b>	
Lectures in specialisation: Theoretical, Experimental, Applied or Astro Physics, 2/3 from specialisation (20 SWS) <b>40 ECTS Points</b>		Seminar in specialisation (2 SWS) <b>6 ECTS Points</b>		
4 Diplom exams <sup>3</sup>				
Preparation and Training for Diploma thesis (3 months) + Diploma thesis (9 months) <b>60 ECTS Points</b>				