



## PLAN OF REGULAR STUDIES, GRADUATE PROGRAMME

**faculty: PHYSICS, speciality: ENVIRONMENTAL PHYSICS**

REGULAR DAILY STUDIES – enrolment 2016/2017

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Subject			Summary figures		Curriculum in respective semesters (hours per week)															
			Including:		I		II		III		IV									
			H	pt.	H	pt.	H	pt.	H	pt.	H	pt.								
<b>A. GENERAL SUBJECTS</b>																				
1	English	Lab	30	2		2	2													
2	Physical education*	T	30	1						2	1									
3	Selective subject*		30	2						2	2									
4	Selective subject in the field of humanities*		15	2			1	2												
5	Selective social science subject*		30	3						2	3									
<b>B. BASIC SUBJECTS</b>																				
6	Physics laboratory II	Lab	105	12		7	12													
<b>C. FIELD SUBJECTS</b>																				
7	Theoretical physics	T	60	10		4	5													
8	Theoretical physics	L	45	7		<u>3</u>	5													
9	Solid state physics	T	45	7						3	4									
10	Solid state physics	L	30	5						<u>2</u>	3									
11	Quantum physics	T	45	7				3	4											
12	Quantum physics	L	30	5				<u>2</u>	3											
13	Nuclear and high energy physics	T	30	5								2	3							
14	Nuclear and high energy physics	L	30	5						<u>2</u>	3									
15	Introduction to the physics of atoms and particles	T	30	5				2	3											
16	Introduction to the physics of atoms and particles	L	30	5				<u>2</u>	3											
<b>D. SPECIALIZATION SUBJECTS**</b>																				
17	Modern experimental physics	L	15	2		<u>1</u>	2													
18	Computer assistance for experiments	Lab	30	4		2	4													
19	Computational methods in environmental physics	T	30	3				2	3											
20	Computer simulations	Lab	30	4				2	4											
21	Computer simulations	L	30	4				<u>2</u>	3											
22	Environmental chemistry	Lab	15	2				1	2											
23	Environmental chemistry	L	30	4				<u>2</u>	3											
24	Advanced spectroscopic methods	T	30	4								2	2							
25	Advanced spectroscopic methods	L	15	2						<u>1</u>	2									
26	Antennas radiation	Lab	30	4														2	2	
27	Antennas radiation	L	30	4														<u>2</u>	2	
28	Ionizing radiation and radiological protection	L	30	2														2	2	
<b>ELECTIVE SUBJECTS***</b>																				
29	Graduate seminar I	S	30	3						2	3									
30	Graduate seminar II	S	30	4														2	4	
31	General seminar	S	30	4														2	4	
32	Monographic lecture I	L	30	4						<u>2</u>	4									
33	Monographic lecture II	L	30	4														<u>2</u>	4	
34	<b>MASTER'S THESIS</b>			12																12
35	<b>MAGISTER EXAMINATION</b>																			E
<b>Sum:</b>			1080	120		19	30	18	28	22	30	12	30							
<b>NUMBER OF EXAMINATIONS</b>						<u>2E</u>	<u>4E</u>	<u>4E</u>	<u>2E+</u>	<u>E</u>										

Legend: L - lecture, T - Tutorials, Lab - laboratory, Pr -practice, S – seminar  
 The lecture courses are closed with an examination  
 Tutorials, laboratories and seminars — **credit and mark**

Examination is made  
by a bold and underlined figure

H – hours per week  
pt. - ECTS

**Subjects:**

**General seminar, Graduate seminar I, II — credit and mark.**

**Ionizing radiation and radiological protection — credit and mark.**

**Selective subject\*:** Variety in unity in biological sciences, University-wide elective courses or from another field of study (30 hours, 2 ECTS) - credit without grade.      **Physical education - credit without grade.**

**Selective subject in the field of humanities\*:** Philosophy of nature / Humanistic subject from another faculty (15 hours, 2 ECTS) - credit and mark.

**Selective social science subject\*:** Elements of economics / Social subject from another faculty (30 hours, 3 ECTS) - credit and mark.

\* - selective subjects,  
\*\* - specialty-related elective courses,  
\*\*\* - elective courses within specialty

Plan studiów zatwierdzono na Radzie Wydziału w dniu 26 kwietnia 2016 r  
Zmiany wprowadzono:

## PLAN OF REGULAR STUDIES, GRADUATE PROGRAMME

faculty: PHYSICS, speciality: THEORETICAL PHYSICS

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REGULAR DAILY STUDIES – enrolment 2016/2017

Subject		Summary figures		Curriculum in respective semesters (hours per week)							
		Including:		I		II		III		IV	
		H	pt.	H	pt.	H	pt.	H	pt.	H	pt.
<b>A. GENERAL SUBJECTS</b>											
1	English					2	2				
2	Physical education*	30	2					2	1		
3	Selective subject*	30	2					2	2		
4	Selective subject in the field of humanities*	15	2			1	2				
5	Selective social science subject*	30	3					2	3		
<b>B. BASIC SUBJECTS</b>											
6	Physics laboratory II	105	12			7	12				
<b>C. FIELD SUBJECTS</b>											
7	Theoretical physics	60	10			4	5				
8	Theoretical physics	45				<u>3</u>	5				
9	Solid state physics	45						3	4		
10	Solid state physics	30	7					<u>2</u>	3		
11	Quantum physics I	45					3	4			
12	Quantum physics I	30	7				<u>2</u>	3			
13	Nuclear and high energy physics	30						2	3		
14	Nuclear and high energy physics	30						<u>2</u>	3		
15	Introduction to the physics of atoms and particles	30					2	3			
16	Introduction to the physics of atoms and particles	30					<u>2</u>	3			
<b>D. SPECIALIZATION SUBJECTS*</b>											
17	Mathematical methods in physics	30	6			2	4				
18	Mathematical methods in physics	15				<u>1</u>	2				
19	Packages for symbolic computations	30	3				2	3			
20	Computer simulations	30					2	4			
21	Computer simulations	30	7				<u>2</u>	3			
22	Statistical physics	30					2	3			
23	Statistical physics	15	5				1	2			
24	Quantum physics II	30	4					2	2		
25	Quantum physics II	15						<u>1</u>	2		
26	Field theory	30								2	2
27	Field theory	30	4							<u>2</u>	2
28	Elementary particle physics	30	2							2	2
<b>ELECTIVE SUBJECTS**</b>											
29	Graduate seminar I	30	3					2	3		
30	Graduate seminar II	30	4							2	4
31	General seminar	30	4							2	4
32	Monographic lecture I	30	4					<u>2</u>	4		
33	Monographic lecture II	30	4							<u>2</u>	4
34	<b>MASTER'S THESIS</b>		12								12
35	<b>MAGISTER EXAMINATION</b>									<b>E</b>	
<b>Sum:</b>		<b>1080</b>	<b>120</b>	<b>19</b>	<b>30</b>	<b>19</b>	<b>30</b>	<b>22</b>	<b>30</b>	<b>12</b>	<b>30</b>
<b>NUMBER OF EXAMINATIONS</b>				<b>2E</b>	<b>3E</b>			<b>4E</b>	<b>2E+</b>	<b>E</b>	

**Legend:** L - lecture, T - Tutorials, Lab - laboratory, Pr -practice, S – seminar

The lecture courses are closed with an **examination**

Tutorials, laboratories and seminars — **credit and mark**

**Subjects:**

**General seminar, Graduate seminar I, II — credit and mark.**

**Lectures: Statistical physics, Elementary particle physics - credit and mark**

**Selective subject\*:** Variety in unity in biological sciences, University-wide elective courses or from another field of study (30 hours, 2 ECTS) - credit without grade.      **Physical education - credit without grade.**

**Selective subject in the field of humanities\*:** Philosophy of nature / Humanistic subject from another faculty (15 hours, 2 ECTS) - credit and mark.

**Selective social science subject\*:** Elements of economics / Social subject from another faculty (30 hours, 3 ECTS) - credit and mark.

Plan studiów zatwierdzono na Radzie Wydziału w dniu 26 kwietnia 2016 r  
Zmiany wprowadzono:

Examination is made by a bold and underlined figure

H – hours per week

pt. - ECTS

\* - selective subjects,  
\*\* - specialty-related elective courses,  
\*\*\*- elective courses within specialty

# PLAN OF REGULAR STUDIES, GRADUATE PROGRAMME

faculty: PHYSICS, speciality: COMPUTER ASTROPHYSICS

REGULAR DAILY STUDIES – enrolment 2016/2017

page 4

Subject		figures		(hours per week)								
		Including:		I		II		III		IV		
		H	pt.	H	pt.	H	pt.	H	pt.	H	pt.	
<b>A. GENERAL SUBJECTS</b>												
1	English	30	2	2	2							
2	Physical education*	30	1					2	1			
3	Selective subject*	30	2					2	2			
4	Selective subject in the field of humanities*	15	2			1	2					
5	Selective social science subject*	30	3					2	3			
<b>B. BASIC SUBJECTS</b>												
6	Physics laboratory II	Lab	105	12	7	12						
<b>C. FIELD SUBJECTS</b>												
7	Theoretical physics	T	60	10	4	5						
8	Theoretical physics	L	45		<u>3</u>	5						
9	Solid state physics	T	45					3	4			
10	Solid state physics	L	30	7				<u>2</u>	3			
11	Quantum physics	T	45			3	4					
12	Quantum physics	L	30	7		<u>2</u>	3					
13	Nuclear and high energy physics	T	30					2	3			
14	Nuclear and high energy physics	L	30	6				<u>2</u>	3			
15	Introduction to the physics of atoms and particles	T	30			2	3					
16	Introduction to the physics of atoms and particles	L	30	6		<u>2</u>	3					
<b>D. SPECIALIZATION SUBJECTS**</b>												
17	Astrophysics I	Lab	30	6	2	4						
18	Astrophysics I	L	15		<u>1</u>	2						
19	Astrophysics II	Lab	30	6			2	3				
20	Astrophysics II	L	30			<u>2</u>	3					
21	Extragalactic astronomy and cosmology	Lab	15	4		1	2					
22	Extragalactic astronomy and cosmology	L	15			1	2					
23	Astrophysics of compact objects	Lab	30	6						2	4	
24	Astrophysics of compact objects	L	15							<u>1</u>	2	
25	Modern radio astronomy	L	30	2				2	2			
26	High-energy astrophysics	L	30	2				<u>2</u>	2			
27	Radiative processes in astrophysics	Lab	45	5		3	3					
28	Radiative processes in astrophysics	L	30			<u>2</u>	2					
<b>ELECTIVE SUBJECTS***</b>												
29	Graduate seminar I	S	30	3				2	3			
30	Graduate seminar II	S	30	4						2	4	
31	General seminar	S	30	4						2	4	
32	Monographic lecture I	L	30	4				<u>2</u>	4			
33	Monographic lecture II	L	30	4						<u>2</u>	4	
34	<b>MASTER'S THESIS</b>			12							12	
35	<b>MAGISTER EXAMINATION</b>									<b>E</b>		
<b>Sum:</b>			<b>1080</b>	<b>120</b>	<b>19</b>	<b>30</b>	<b>21</b>	<b>30</b>	<b>23</b>	<b>30</b>	<b>9</b>	<b>30</b>
<b>NUMBER OF EXAMINATIONS</b>					<b><u>2E</u></b>		<b><u>4E</u></b>		<b><u>4E</u></b>		<b><u>2E+</u></b>	<b><u>E</u></b>

**Legend:** L - lecture, T - Tutorials, Lab - laboratory, Pr -practice, S – seminar  
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 Tutorials, laboratories and seminars — **credit and mark**

Examination is made  
by a bold and underlined figure  
 H – hours per week  
 pt. - ECTS

**Subjects:**

General seminar, Graduate seminar I, II — **credit and mark.**  
 Extragalactic astronomy and cosmology, Modern radio astronomy —  
**credit and mark.**

\* - selective subjects,  
 \*\* - speciality-related elective courses,  
 \*\*\* - elective courses within speciality

Selective subject\*: Variety in unity in biological sciences, University-wide elective courses or from another field  
 of study (30 hours, 2 ECTS) - **credit without grade.** Physical education - **credit without grade.**

Selective subject in the field of humanities\*: Philosophy of nature / Humanistic subject from another faculty  
 (15 hours, 2 ECTS) - **credit and mark.**

Selective social science subject\*: Elements of economics / Social subject  
 from another faculty (30 hours, 3 ECTS) - **credit and mark.**

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 Zmiany wprowadzono: