

### CURRICULUM – PhD studies conducted in English

<b>General characteristics of doctoral studies</b>	
Unit offering doctoral studies:	Institute of Physics
Name of doctoral studies::	PhD studies conducted in English
Location of studies:	
Area of knowledge:	Science
Field of science:	Science of Physics
Discipline of science:	Physics
System of studies (full-time/part-time)	Full-time studies
Total number of ECTS credits:	45

<b>Education effects for PhD studies conducted in English</b>	
<b>Code of learning outcome</b>	<b>Competences of doctoral studies graduates in the field of Physics</b>
<b>Knowledge</b>	
W_01_III	The PhD student possesses extensive knowledge in the selected specialization
W_02_III	The PhD student extended the knowledge concerning achievements of contemporary theoretical and experimental physics
W_03_III	The PhD student knows the professional terminology of the selected specialization in English
W_04_III	The PhD student possesses extended knowledge of research methods and procedures, as regards the selected specialization, which allows independent planning of ways in which research problems may be solved
W_05_III	The PhD student has extended knowledge concerning the importance of the selected specialization for the development of science
W_06_III	The PhD student has mastered mathematics and numerical methods to the extent that is indispensable for describing and solving research problems, as well as for modeling phenomena and processes related to them
W_07_III	The PhD student is knowledgeable and skillful to use software packages, as well as to make use of available databases as tools for scientific work, connected with the specialization selected
W_08_III	The PhD student possesses knowledge concerning the rudiments of copyright law and protection of intellectual property, as well as customary and ethical conditions concerning scientific activity
W_09_III	The student's knowledge of English is sufficient to communicate actively and to make presentations of scientific results as well as to write scientific publications in that language
W_10_III	The PhD student is familiar with the occupational health and safety to a level, which allows for independent organisation of individual and team work in scientific laboratory
W_11_III	The PhD student demonstrates knowledge in the field of designing, conducting and application possibilities of a didactic

	experiment in the academic teaching process.
W_12_III	The PhD student demonstrates knowledge in the field of teaching ethics in academic institutions.
<b>Skills</b>	
U_01_III	The PhD student is able to independently formulate a research problem, propose and carry out the studies aiming at its solution
U_02_III	The PhD student is capable of finding and analyzing publications, as well as to assess them formally and as to the merits assess, select, and gather them, thus building her/his own scientific workshop
U_03_III	The PhD student is capable of assuming a critical attitude to the existing knowledge in the topic of interest, and take a new challenge
U_04_III	The PhD student is capable of writing applications for grants, projects, as well as is able to plan her/his own professional and scientific career
U_05_III	The PhD student is able to analyze, conclude, verify, synthesize research observations, is equipped with extended ability to make self-assessment and formulate reports from her/his own cognitive and scientific progress
U_06_III	The PhD student is able to prepare a longer oral statement, observing proper composition, formulating theses, preparing discussion, supportive arguments for her/his own position, using documentation and views that are her/his own or belong to other authors
U_07_III	The PhD student is able to plan the process of preparing a written scientific dissertation, is capable to adjust her/his own written scientific text to the guidelines of editors of scientific publications, knows the procedure of assessing scientific papers as well as parametrizing scientific output in Poland and worldwide
U_08_III	The PhD student is able to use various channels and techniques for communicating with specialists in science
U_09_III	The PhD student is capable of popularizing or assisting the popularization of physics among various social and age groups
U_10_III	The PhD student is prepared to teach classes independently, also using modern methods and techniques.
U_11_III	The PhD student can make use of available resources, means and working methods to conduct an effective teaching



	process.
U_12_III	The PhD student can make use of modern information technologies in teaching.
<b>Social competencies</b>	
K_01_III	The PhD student is aware of the level of the research competencies s/he possesses, their essential value, genuine character, and novelty, as well as the personal input into the solution of a theoretical and/or practical problem, within the framework of the specialization selected
K_02_III	The PhD student is able to apply ethical norms in social life and scientific work
K_03_III	The PhD student has the sense of social mission, resulting from the profession related to the field of science represented, as well as abilities possessed, and in that respect has the basis for providing education and undertaking independent scientific work
K_04_III	The PhD student is open for digesting new ideas and motivated to improve her/his scientific and organizational level and to use it in professional environment. The PhD student is supposed to be able to verify her/his opinions and to follow the changes in science, culture, and technology
K_05_III	The PhD student is able to co-operate with a group, organize team work, assuming the position of leader

Education modules with desired learning outcomes			
Education modules	Number of ECTS credits	Desired learning outcomes	Means of verification of desired learning outcomes achieved by a doctoral student
Advanced course lecture : Selected sections of quantum mechanics	4	<b>Knowledge</b> 1. The PhD student possesses extensive knowledge in the selected specialization 2. The PhD student extended the knowledge concerning achievements of contemporary theoretical and experimental physics 3. The PhD student has extended knowledge concerning the importance of the selected specialization for the development of science	Exam: written or oral
		<b>Skills</b> 1. The PhD student is able to independently formulate a research problem, propose and carry out the studies aiming at its solution 2. The PhD student is capable of assuming a critical attitude to the existing knowledge in the topic of interest, and take a new challenge 3. The PhD student is able to analyze, conclude, verify, synthesize research observations, is equipped with extended ability to make self-assessment and formulate reports from her/his own cognitive and scientific progress 4. The PhD student is able to prepare a longer oral statement, observing proper composition, formulating theses, preparing discussion, supportive arguments for her/his own position, using documentation and views that are her/his own or belong	

		to other authors	
		<p><b>Social competencies</b></p> <p>1. The PhD student is aware of the level of the research competencies s/he possesses, their essential value, genuine character, and novelty, as well as the personal input into the solution of a theoretical and/or practical problem, within the framework of the specialization selected</p> <p>2. The PhD student is open for digesting new ideas and motivated to improve her/his scientific and organizational level, and to use it in professional environment. The PhD student is supposed to be able to verify her/his opinions and to follow the changes in science, culture, and technology</p>	
Advanced course lecture : Contemporary methods in experimental physics	3	<p><b>Knowledge</b></p> <p>1. The PhD student possesses extensive knowledge in the selected specialization</p> <p>2. The PhD student extended the knowledge concerning achievements of contemporary theoretical and experimental physics</p> <p>3. The PhD student knows the professional terminology of the selected specialization in English</p> <p>4. The PhD student possesses extended knowledge of research methods and procedures, as regards the selected specialization, which allows independent planning of ways in which research problems may be solved</p> <p>5. The PhD student possesses knowledge concerning the rudiments of copyright law and protection of intellectual property, as well as customary and ethical conditions concerning scientific activity</p> <p>6. The student's knowledge of English is sufficient to communicate actively and to make presentations of scientific results as well as to write scientific publications in that language</p>	Exam: written or oral



	<p>7. The PhD student is familiar with the occupational health and safety to a level, which allows for independent organisation of individual and team work in scientific laboratory</p> <p><b>Skills</b></p> <ol style="list-style-type: none"> <li>1. The PhD student is able to independently formulate a research problem, propose and carry out the studies aiming at its solution</li> <li>2. The PhD student is capable of finding and analyzing publications, as well as to assess them formally and as to the merits assess, select, and gather them, thus building her/his own scientific workshop</li> <li>3. The PhD student is capable of assuming a critical attitude to the existing knowledge in the topic of interest, and take a new challenge</li> <li>4. The PhD student is capable of popularizing or assisting the popularization of physics among various social and age groups</li> <li>5. The PhD student is prepared for teaching classes independently</li> </ol> <p><b>Social competencies</b></p> <ol style="list-style-type: none"> <li>1. The PhD student is aware of the level of the research competencies s/he possesses, their essential value, genuine character, and novelty, as well as the personal input into the solution of a theoretical and/or practical problem, within the framework of the specialization selected</li> <li>2. The PhD student is able to apply ethical norms in social life and scientific work</li> <li>3. The PhD student is open for digesting new ideas and motivated to improve her/his scientific and organizational level, and to use it in professional environment. The PhD student is supposed to be able to verify her/his opinions and to follow the changes in science, culture, and technology</li> </ol>	
--	---	--

		4. The PhD student is able to co-operate with a group, organize team work, assuming the position of leader	
<b>Seminar</b>	<b>8</b>	<p><b>Knowledge</b></p> <ol style="list-style-type: none"> <li>1. The PhD student possesses extensive knowledge in the selected specialization</li> <li>2. The PhD student has extended knowledge concerning the importance of the selected specialization for the development of science</li> <li>3. The PhD student possesses knowledge concerning the rudiments of copyright law and protection of intellectual property, as well as customary and ethical conditions concerning scientific activity</li> <li>4. The student's knowledge of English is sufficient to communicate actively and to make presentations of scientific results as well as to write scientific publications in that language</li> <li>5. The PhD student knows the professional terminology of the selected specialization in English</li> <li>6. The PhD student is familiar with the occupational health and safety to a level, which allows for independent organisation of individual and team work in scientific laboratory</li> </ol> <p><b>Skills</b></p> <ol style="list-style-type: none"> <li>1. The PhD student is capable of finding and analyzing publications, as well as to assess them formally and as to the merits assess, select, and gather them, thus building her/his own scientific workshop</li> <li>2. The PhD student is capable of assuming a critical attitude to the existing knowledge in the topic of interest, and take a new challenge</li> <li>3. The PhD student is able to prepare a longer oral statement, observing proper composition, formulating theses, preparing discussion, supportive arguments for</li> </ol>	<b>Credit</b>



		<p>her/his own position, using documentation and views that are her/his own or belong to other authors</p> <p>4. The PhD student is able to use various channels and techniques for communicating with specialists in science</p> <p><b>Social competencies</b></p> <p>1. The PhD student is aware of the level of the research competencies s/he possesses, their essential value, genuine character, and novelty, as well as the personal input into the solution of a theoretical and/or practical problem, within the framework of the specialization selected</p> <p>2. The PhD student is able to apply ethical norms in social life and scientific work</p> <p>3. The PhD student has the sense of social mission, resulting from the profession related to the field of science represented, as well as abilities possessed, and in that respect has the basis for providing education and undertaking independent scientific work j</p> <p>4. The PhD student is open for digesting new ideas and motivated to improve her/his scientific and organizational level, and to use it in professional environment. The PhD student is supposed to be able to verify her/his opinions and to follow the changes in science, culture, and technology</p>	
Doctoral studies seminar	4	<p><b>Knowledge</b></p> <p>1. The PhD student possesses extensive knowledge in the selected specialization</p> <p>2. The PhD student has extended knowledge concerning the importance of the selected specialization for the development of science</p> <p>3. The PhD student has mastered mathematics and numerical methods to the extend that is indispensable for describing and solving research problems, as well as for modeling phenomena and processes related to them</p>	Credit

	<p>4. The PhD student is knowledgeable and skillful to use software packages, as well as to make use of available databases as tools for scientific work, connected with the specialization selected</p> <p>5. The PhD student knows the professional terminology of the selected specialization in English</p> <p>6. The student's knowledge of English is sufficient to communicate actively and to make presentations of scientific results as well as to write scientific publications in that language</p> <p>7. The PhD student possesses extended knowledge of research methods and procedures, as regards the selected specialization, which allows independent planning of ways in which research problems may be solved</p> <hr/> <p><b>Skills</b></p> <p>1. The PhD student is able to independently formulate a research problem, propose and carry out the studies aiming at its solution</p> <p>2. The PhD student is capable of finding and analyzing publications, as well as to assess them formally and as to the merits assess, select, and gather them, thus building her/his own scientific workshop</p> <p>3. The PhD student is able to plan the process of preparing a written scientific dissertation, is capable to adjust her/his own written scientific text to the guidelines of editors of scientific publications, knows the procedure of assessing scientific papers as well as parametrizing scientific output in Poland and worldwide</p> <p>4. The PhD student is capable of writing applications for grants, projects, as well as is able to plan her/his own professional and scientific career</p> <p>5. The PhD student is capable of assuming a critical attitude to the existing knowledge in the topic of interest, and take a new challenge</p>	
--	--	--

		<p>6. The PhD student is able to analyze, conclude, verify, synthesize research observations, is equipped with extended ability to make self-assessment and formulate reports from her/his own cognitive and scientific progress</p>	
		<p><b>Social competencies</b></p> <p>1. The PhD student is aware of the level of the research competencies s/he possesses, their essential value, genuine character, and novelty, as well as the personal input into the solution of a theoretical and/or practical problem, within the framework of the specialization selected</p> <p>2. The PhD student is able to apply ethical norms in social life and scientific work</p>	
<p><b>Methodology of didactics in physics and natural science</b></p>	<p><b>2</b></p>	<p><b>Knowledge</b></p> <p>1. The PhD student is familiar with the occupational health and safety to a level, which allows for independent organisation of individual and team work in scientific laboratory</p> <p>2. The PhD student possesses knowledge concerning the rudiments of copyright law and protection of intellectual property, as well as customary and ethical conditions concerning scientific activity</p> <p>3. The PhD student demonstrates knowledge in the field of teaching ethics in academic institutions.</p> <p><b>Skills</b></p> <p>1. The PhD student is able to prepare a longer oral statement, observing proper composition, formulating theses, preparing discussion, supportive arguments for her/his own position, using documentation and views that are her/his own or belong to other authors</p> <p>2. The PhD student is prepared to teach classes independently, also using modern methods and techniques.</p>	<p>Credit</p>



		<p>3. The PhD student can make use of available resources, means and working methods to conduct an effective teaching process.</p> <p>4. The PhD student can make use of modern information technologies in teaching.</p> <p>5. The PhD student is capable of popularizing or assisting the popularization of physics among various social and age groups</p>	
		<p><b>Social competencies</b></p> <p>1. The PhD student has the sense of social mission, resulting from the profession related to the field of science represented, as well as abilities possessed, and in that respect has the basis for providing education and undertaking independent scientific work</p> <p>2. The PhD student is able to co-operate with a group, organize team work, assuming the position of leader</p>	
Teaching of physics in areas of selected specializations	3	<p><b>Theoretical group:</b></p> <p><b>Knowledge</b></p> <p>1. The PhD student demonstrates knowledge in the field of designing, conducting and application possibilities of a didactic experiment in the academic teaching process.</p> <p>2. The PhD student demonstrates knowledge in the field of teaching ethics in academic institutions.</p> <p>3. The PhD student possesses extensive knowledge in the selected specialization</p> <p>4. The PhD student has mastered mathematics and numerical methods to the extend that is indispensable for describing and solving research problems, as well as for modeling phenomena and processes related to them</p>	Credit

	<p>5. The PhD student is knowledgeable and skillful to use software packages, as well as to make use of available databases as tools for scientific work, connected with the specialization selected</p>	
	<p><b>Skills</b></p> <p>1. The PhD student is able to use various channels and techniques for communicating with specialists in science</p> <p>2. The PhD student is prepared to teach classes independently, also using modern methods and techniques</p> <p>3. The PhD student can make use of available resources, means and working methods to conduct an effective teaching process</p> <p>4. The PhD student can make use of modern information technologies in teaching</p> <p>5. The PhD student is capable of popularizing or assisting the popularization of physics among various social and age groups</p>	
	<p><b>Social competencies</b></p> <p>1. The PhD student has the sense of social mission, resulting from the profession related to the field of science represented, as well as abilities possessed, and in that respect has the basis for providing education and undertaking independent scientific work</p> <p>2. The PhD student is open for digesting new ideas and motivated to improve her/his scientific and organizational level, and to use it in professional environment. The PhD student is supposed to be able to verify her/his opinions and to follow the changes in science, culture, and technology</p>	
	<p><b>Experimental group:</b></p>	
	<p><b>Knowledge</b></p> <p>1. The PhD student demonstrates knowledge in the field of designing, conducting</p>	

	<p>and application possibilities of a didactic experiment in the academic teaching process</p> <p>2. The PhD student demonstrates knowledge in the field of teaching ethics in academic institutions</p> <p>3. The PhD student extended the knowledge concerning achievements of contemporary theoretical and experimental physics</p> <p>4. The PhD student possesses extended knowledge of research methods and procedures, as regards the selected specialization, which allows independent planning of ways in which research problems may be solved</p> <p>5. The PhD student has extended knowledge concerning the importance of the selected specialization for the development of science</p> <p>6. The PhD student is familiar with the occupational health and safety to a level, which allows for independent organisation of individual and team work in scientific laboratory</p>	
	<p><b>Skills</b></p> <p>1. The PhD student is able to analyze, conclude, verify, synthesize research observations, is equipped with extended ability to make self-assessment and formulate reports from her/his own cognitive and scientific progress</p> <p>2. The PhD student is prepared to teach classes independently, also using modern methods and techniques</p> <p>3. The PhD student can make use of available resources, means and working methods to conduct an effective teaching process</p> <p>4. The PhD student is capable of popularizing or assisting the popularization of physics among various social and age groups</p>	



		<p>5. The PhD student is able to use various channels and techniques for communicating with specialists in science</p> <p><b>Social competencies</b></p> <p>1. The PhD student has the sense of social mission, resulting from the profession related to the field of science represented, as well as abilities possessed, and in that respect has the basis for providing education and undertaking independent scientific work</p> <p>2. The PhD student is able to co-operate with a group, organize team work, assuming the position of leader</p>	
Specialist lectures	3	<p><b>Knowledge</b></p> <p>1. The PhD student possesses extensive knowledge in the selected specialization</p> <p>2. The PhD student knows the professional terminology of the selected specialization in English</p> <p>3. The PhD student possesses extended knowledge of research methods and procedures, as regards the selected specialization, which allows independent planning of ways in which research problems may be solved</p> <p>4. The PhD student has mastered mathematics and numerical methods to the extend that is indispensable for describing and solving research problems, as well as for modeling phenomena and processes related to them</p> <p><b>Skills</b></p> <p>1. The PhD student is able to analyze, conclude, verify, synthesize research observations, is equipped with extended ability to make self-assessment and formulate reports from her/his own cognitive and scientific progress</p> <p>2. The PhD student is capable of popularizing or assisting the popularization of physics among various social and age groups</p>	Exam: written or oral

		3. The PhD student is prepared to teach classes independently, also using modern methods and techniques	
		<p><b>Social competencies</b></p> <p>1. The PhD student is aware of the level of the research competencies s/he possesses, their essential value, genuine character, and novelty, as well as the personal input into the solution of a theoretical and/or practical problem, within the framework of the specialization selected</p>	
Conversation class: „Scientific English“	2	<p><b>Knowledge</b></p> <p>1. The student's knowledge of English is sufficient to communicate actively and to make presentations of scientific results as well as to write scientific publications in that language</p> <hr/> <p><b>Skills</b></p> <p>1. The student's knowledge of English is sufficient to communicate actively and to make presentations of scientific results as well as to write scientific publications in that language</p> <p>2. The PhD student is able to use various channels and techniques for communicating with specialists in science</p> <p>3. The PhD student is capable of popularizing or assisting the popularization of physics among various social and age groups</p> <hr/> <p><b>Social competencies</b></p> <p>1. The PhD student is open for digesting new ideas and motivated to improve her/his scientific and organizational level, and to use it in professional environment. The PhD student is supposed to be able to verify her/his opinions and to follow the changes in science, culture, and technology</p>	Credit

<p><b>Apprenticeship in teaching: classes (hours) conducted or co-conducted</b></p>	<p>16</p>	<p><b>Knowledge</b></p> <ol style="list-style-type: none"> <li>1. The PhD student extended the knowledge concerning achievements of contemporary theoretical and experimental physics</li> <li>2. The PhD student demonstrates knowledge in the field of designing, conducting and application possibilities of a didactic experiment in the academic teaching process..</li> <li>3. The PhD student demonstrates knowledge in the field of teaching ethics in academic institutions.</li> <li>4. The PhD student is familiar with the occupational health and safety to a level, which allows for independent organisation of individual and team work in scientific laboratory</li> <li>5. The PhD student has mastered mathematics and numerical methods to the extend that is indispensable for describing and solving research problems, as well as for modeling phenomena and processes related to them</li> <li>6. The PhD student is knowledgeable and skillful to use software packages, as well as to make use of available databases as tools for scientific work, connected with the specialization selected</li> </ol> <hr/> <p><b>Skills</b></p> <ol style="list-style-type: none"> <li>1. The PhD student is capable of popularizing or assisting the popularization of physics among various social and age groups</li> <li>2. The PhD student can make use of available resources, means and working methods to conduct an effective teaching process</li> <li>3. The PhD student is prepared to teach classes independently, also using modern methods and techniques</li> </ol>	<p>Credit</p>
---	-----------	--	---------------



	<p>4. The PhD student can make use of modern information technologies in teaching</p> <p><b>Social competencies</b></p> <p>1. The PhD student is aware of the level of the research competencies s/he possesses, their essential value, genuine character, and novelty, as well as the personal input into the solution of a theoretical and/or practical problem, within the framework of the specialization selected</p> <p>2. The PhD student is able to apply ethical norms in social life and scientific work</p> <p>3. The PhD student has the sense of social mission, resulting from the profession related to the field of science represented, as well as abilities possessed, and in that respect has the basis for providing education and undertaking independent scientific work</p> <p>4. The PhD student is able to co-operate with a group, organize team work, assuming the position of leader</p> <p>5. The PhD student is open for digesting new ideas and motivated to improve her/his scientific and organizational level, and to use it in professional environment. The PhD student is supposed to be able to verify her/his opinions and to follow the changes in science, culture, and technology</p>	
--	---	--

Curriculum effective from academic year: .....2014/15.....

Curriculum was adopted at a meeting of the Faculty Council of Mathematics, Physics and Chemistry on .....  
(date of the meeting)

DZIEKAN  
Wydział Matematyki, Fizyki i Chemii  
*A. Paliw*  
.....  
(Dean's signature)  
prof. zw. dr hab. Alicja Kalska

*Marta Sołtys*

KIEROW  
SUDIŃ DOKTORA  
Instytutu B  
*Monika Bednar*  
prof. U.S. dr hab. Ilona E.

### Framework curriculum for PhD studies conducted in English

Faculty offering PhD studies conducted in English:	Institute of Physics
Name of doctoral studies:	PhD studies in Physics conducted in English
System of studies ( <i>full-time/part-time</i> ):	Full-time studies
Total number of ECTS credits	45



## Year I

Obligatory classes					
Module code in USOS: 03-S3FI00-	Module title	Form of a course	Form of crediting a course	Number of contact hours	Number of ECTS credits
AMECHKW	Advanced course lecture : Selected sections of quantum mechanics	Lecture	Exam	45	4
		Conversation class	Credit	30	
ASEM01	Seminar	Seminar	Credit	30	2
ASEMDOK01	Doctoral studies seminar	Seminar	Credit	15	1
<b>Sum</b>				<b>120</b>	<b>7</b>
Optional classes					
AMETODFIZ	Methodology of didactics in physics and natural science	Lecture	Credit	10	2
		Conversation class	Credit	20	
ANAUFIZ01	Teaching of physics in areas of selected specializations	Conversation class	Credit	45	3
ASCIENG	Conversation class „Scientific English“	Conversation class	Credit	30	2
<b>Sum</b>				<b>60</b>	<b>7</b>
Teaching practices					
APRAZAW01	Apprenticeship in teaching: classes (hours) conducted or co-conducted				4
<b>Total:</b>					<b>18</b>

**Year II**

<b>Obligatory classes</b>					
<b>Module code w USOS:</b>	<b>Module title</b>	<b>Form of course</b>	<b>Form of crediting a course</b>	<b>Number of contact hours</b>	<b>Number of ECTS credits</b>
<b>03-S3FI00-</b>					
AFIZEKS	Advanced course lecture : Contemporary methods in experimental physics	Lecture	Exam	30	3
		Conversation class	Credit	30	
ASEM02	Seminar	Seminar	Credit	30	2
ASEMDOK02	Doctoral studies seminar	Seminar	Credit	15	1
<b>Sum</b>				<b>105</b>	<b>6</b>
<b>Teaching practices</b>					
APRAZAW02	Apprenticeship in teaching: classes (hours) conducted or co-conducted				4
<b>Total:</b>					<b>10</b>

Year III

Obligatory classes					
Module code w USOS: 03-S3FI00-	Module title	Form of course	Form of crediting a course	Number of contact hours	Number of ECTS credits
ASEM03	Seminar	Seminar	Credit	30	2
ASEMDOK03	Doctoral studies seminar	Seminar	Credit	15	1
<b>Sum</b>				<b>45</b>	<b>3</b>
Optional classes					
AWYKSPEC	Specialist lectures	Lecture	Exam	30	3
		Conversation class	Credit	30	
<b>Sum</b>				<b>60</b>	<b>3</b>
Teaching practices					
APRAZAW03	Apprenticeship in teaching: classes (hours) conducted or co-conducted				4
<b>Total:</b>					<b>10</b>



## Year IV

Obligatory classes					
Module code w USOS:	Module title	Form of course	Form of crediting a course	Number of contact hours	Number of ECTS credits
03-S3FI00-					
ASEM04	Seminar	Seminar	Credit	30	2
ASEMDOK04	Doctoral studies seminar	Seminar	Credit	15	1
<b>Sum</b>				<b>45</b>	<b>3</b>
Teaching practices					
APRAZAW04	Apprenticeship in teaching: classes (hours) conducted or co-conducted				<b>4</b>
<b>Total</b>					<b>7</b>

Curriculum effective from academic year: .....2014/15.....

Curriculum was adopted at a meeting of the Faculty Council of Mathematics, Physics and Chemistry on .....  
(date of the meeting)

DZIEKAN  
Wydział Matematyki, Fizyki i Chemii

*A. Podzun*  
.....  
(Dean's signature) *Anna Podzun*

*Marta Sathys*

KIEROWNIK  
SUBIÓW DOKTORANŻICH  
w Instytucie

*Tena Bednarek*  
.....  
prof. US dr hab. Tena Bednarek

