

## Academic 2016/2017 year (5 term, full-time training)

№	course code	Name of the course	Type of the subject	term	ECTS credits	Hours				hours per week	Exam or score during the term E/T
						all	lectures	seminars	practical exercises		
1	2	3	4	5	6	7	8	9	10	11	12
<p><b>Compulsory courses:</b> the student have to study some of the "Basic optional courses", during first two semesters and to gain at least 30 credits per semester. The courses are chosen by the head of the MSc program, depending of the students' previous knowledge in physics. During the 3 and 4 semester the students have to chose minimum four courses from the Optional courses I group.</p>											
<b>Basic optional courses</b>											
1	E 1 0 6	Dosimetry and Radiation Protection	O	1	8,5	255	45	0	60	3 0 4	E
2	M 4 8 2	Radiation Biophysics and Protection - theory	O	1	3	90	45	0	0	3 0 0	E
3	M 4 8 3	Radiation Biophysics and Protection (Dosimetry and Radiation Protection) - lab	O	1	6	180	0	0	75	0 0 5	E
4	E 1 0 7	Nuclear Electronics	O	1	6	180	45	0	45	3 0 4	E
5	E 5 7 3	Introduction to Elementary Particle Physics.	O	1	5.0	150	45	30	0	3 2 0	E
6	E 5 8 4	Quantum Field Theory	O	2	7.0	210	60	30	0	4 2 0	E
7	E 5 8 2	Nuclear Reactions	O	1	4,5	135	45	15	0	3 1 0	E
8	M 4 8 4	Theoretical Nuclear Physics	O	2	4	120	60	0	0	4 0 0	E
9	E 3 8 0	Programming in UNIX environment	O	2	2	60	30	0	0	2 0 0	E
10	E 3 7 9	Laboratory Course of Programming in UNIX environment	O	2	4,5	135	0	0	45	0 0 3	T
11	E 5 6 3	Group Theory	O	1	3	90	45	0	0	3 0 0	E
12	E 1 0 5	Experimental Nuclear Physics	O	2	8	240	45	0	60	3 0 4	E
13	M 4 8 1	Quantum Physics (Subatomic Physics for advanced students )	O	2	5	150	30	0	30	2 0 2	E
14	E 5 7 2	Introduction to the Theory of Elementary Particles	O	2	3	90	45	0	0	3 0 0	E
15	E 1 0 3	Neutron physics	O	2	5	150	45	30	0	3 2 0	E

16	A	3	1	8	Quantum Physics	O	2	8	240	60	30	0	4 2 0	E
17	E	3	8	6	Accelerators and detectors for Ionizing Radiation in Medicine	O	2	6	180	60	30	0	3 2 0	E
18					Information Technologies (Data Acquisition and Network Communications)	O	2	6	180	45	0	45	3 0 2	E
<b>Optional courses - the courses chosen have to add up at least 30 ECTS to the curriculum</b>														
<b>Optional courses I group</b>														
<b>at least 4 courses among the optional courses should be from optional courses I group</b>														
1	M	4	7	4	Standard model of the Strong and Electroweak Interactions	O	3	6	180	60	0	0	4 0 0	E
2	M	4	7	2	Symmetries in the Elementary Particle Physics	O	3	4,5	135	45	0	0	3 0 0	E
3	M	4	7	9	Nuclear Models	O	3	4,5	135	45	0	0	3 0 0	T
4	M	4	7	8	Nuclear Structures	O	3	6	180	45	15	0	3 0 0	E
5	M	4	6	5	Modelling of the Physical Experiment	O	3	6	180	30	0	30	2 0 2	T
6	M	4	7	5	Theory of the Nuclear Reactions	O	3	6	180	45	15	0	3 1 0	E
7	M	4	7	1	Radioactivity in the Environment Radioecology	O	3	7,5	225	30	0	45	2 0 3	E
8	M	1	1	1	Nuclear Electronics 2	O	4	9	270	45	0	45	3 0 3	T

<b>Optional courses II group</b>														
9	M	4	7	3	Weak Interactions of the Elementary Particles	O	3	6	180	60	0	0	4 0 0	E
10	M	4	6	9	Object-oriented programming	O	3	10,5	315	45	0	60	3 0 4	E
11	M	2	7	9	Theoretical astrophysics	O	4	6.0	180	60	15	0	4 1 0	E
12	M	2	8	3	Supersymmetries , quantum deformations and models of interacting systems	O	4	4,5	135	45	0	0	3 0 0	E
13	M	2	8	1	Introduction to the string and superstring theory	O	4	4	120	45	0	0	3 0 0	E
14	M	4	6	3	Automatization of the physical experiment	O	4	4.5	135	45	0	0	3 0 0	E
15	M	1	0	3	Radiochemistry	O	4	7.5	225	30	0	45	2 0 3	T
16	M	0	1	2	Practical Chemistry	O	4	3,5	105	0	15	30	0 1 2	T
17	M	4	6	4	Mössbauer effect and Mössbauer spectroscopy	O	4	6	180	45	0	15	3 0 1	E
18	M	4	7	0	Radiation biophysics	O	4	4.5	135	45	0	0	3 0 0	E
19	M	4	6	6	Modern problems of the nuclear physics	O	4	4.5	135	45	0	0	3 0 0	E
20	M	0	0	5	Medical Image Processing and Analysis	O	3	3,5	105	30	0	15	2 0 1	E
21	M	4	7	6	Introduction to the high performance computing	O	4	4	120	30	0	15	2 0 1	T

<b>22</b>	<b>M4</b>	<b>7</b>	<b>7</b>	Beyond the Standard Model	<b>O</b>	<b>4</b>	<b>4,5</b>	<b>135</b>	<b>45</b>	<b>0</b>	<b>0</b>	<b>3 0 0</b>	<b>T</b>
<b>23</b>	<b>M1</b>	<b>0</b>	<b>6</b>	Metrology of ionizing radiation	<b>O</b>	<b>3</b>	<b>6</b>	<b>180</b>	<b>30</b>	<b>0</b>	<b>30</b>	<b>2 0 2</b>	<b>E</b>
<b>24</b>	<b>M4</b>	<b>8</b>	<b>8</b>	Nuclear Reactions	<b>O</b>	<b>3</b>	<b>4,5</b>	<b>135</b>	<b>45</b>	<b>0</b>	<b>0</b>	<b>3 0 0</b>	<b>E</b>

#### Teaching practice

№	код	Name of the practice	C, O, F	term	ECTS - credits	weeks	hours	Форма на контрол* и, то, ки
		Research work	3	5	12	15	360	R
		Research seminar	3	5	3	15	90	R

#### Graduation

Graduation	ECTS - credits	First final examination first session	Second final examination second session
Diploma thesis defence	15	February - March	June - July

The syllabus is ratified by the Faculty council (Minutes № )

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