

CURRICULUM starting from Academic year 2015-2016**BABEȘ-BOLYAI UNIVERSITY****FACULTY OF PHYSICS**

Field of study: PHYSICS

Programme of study: PHYSICS

Language of instruction: ROMANIAN

Name of qualification: BACHELOR IN PHYSICS

Duration of study: 6 SEMESTERS

Type of study: FULL TIME

I. DEGREE STRUCTURE

180 credits, whereof:

150 credits for compulsory courses

including 6 credits for a foreign language (2 semesters)

no credits for passing the test for subject Sports

30 credits for optional course

and

20 credits for Bachelor exam

II. STRUCTURE OF PROGRAMME (in weeks)

	Courses given		Examination period			Traineeship	Holiday		
	Sem I	Sem II	Winter	Spring	Summer		Winter	Spring	Summer
Year I	14	14	3	3	2	0	3	1	12
Year II	14	14	3	3	2	2	3	1	10
Year III	14	12	3	2	2	2	3	1	13

REMARKS

Traineeship in Semester 4 is organized after Summer examination period

In Semester 6 Traineeship is organized during Semester

The examination period at the end of the Semester 6 is followed by 2 weeks consecrated to preparing Bachelor exams.

III. WEEKLY STRUCTURE OF THE PROGRAMME (in hours)

	Semester I	Semester II
Year I	26	25
Year II	26	25
Year III	25	24

IV. BACHELOR EXAM - between 25 June - 6 July

Part 1: Basic and speciality knowledge exam = 10 credits

Part 2: Bachelor thesis = 10 credits

V. SELECTION OF OPTIONAL COURSES:

Sem. 1: choosing 1 course from package: FLX1105

Sem. 2: choosing 1 course from package: FLX1204

Sem. 3: choosing 1 course from package: FLX1305

Sem. 4: choosing 1 course from package: FLX1406

Sem. 5: choosing 1 course from package: FLX1506

Sem. 6: choosing 1 course from package: FLX1606

For a maximum of 3 optional courses, it is allowed for every student to select any course held at any other Faculty of the Babeș-Bolyai University.

In order to fill a teaching position the graduate must obtain a Certificate issued by the Department of Teacher Training

VI. SIMILAR PROGRAMMES:

Universite d'Orleans, France

Universite Joseph Fourier Grenoble, France

Universitat Osnabruck, Germany

Universita degli Studi di Prama, Italy

Universidad de Zaragoza, Spain

University of Oxford, UK

University of Cambridge, UK

VII. COURSES

YEAR I / SEMESTER 1												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
MLR1101	Algebra	5	2	2	0	4	5	9	E			Complementary
MLR1102	Mathematical Analysis	5	2	2	0	4	5	9	E			Complementary
FLR1103	Mecanics and Acoustics	8	3	2	2	7	7	14	E			Fundamental
CLR1104	Chemistry	4	2	0	1	3	4	7	E			Complementary
FLX1105	Optional course 1	5	2	0	2	4	5	9		C		Speciality
FLX1106	Foreign Language 1	3	0	2	0	2	3	5		C		Complementary
YLU0011	Sports 1	0	0	2	0	2	0	2			VP	Complementary
TOTAL		30	11	10	5	26	29	55	4	2	1	

YEAR I / SEMESTER 2												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLR1201	Heat	8	3	2	2	7	7	14	E			Fundamental
FLR1202	Differential Equations of Theoretical Physics	6	2	2	0	4	7	11	E			Speciality
FLR1203	Electricity and Magnetism	8	3	2	2	7	7	14	E			Fundamental
FLX1204	Optional course 2	5	2	1	0	3	6	9		C		Complementary
FLX1205	Foreign Language 2	3	0	2	0	2	3	5		C		Complementary
YLU0012	Sports 2	0	0	2	0	2	0	2			VP	Complementary
TOTAL		30	10	11	4	25	30	55	3	2	1	

YEAR II / SEMESTER 3												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLR1301	Optics	8	3	2	2	7	7	14	E			Fundamental
FLR1302	Electronics	8	3	2	2	7	7	14	E			Fundamental
FLR1303	Fundamentals of Theoretical Physics	6	3	2	0	5	6	11	E			Fundamental
FLR1304	Applied Informatics in Physics	3	2	0	2	4	1	5	E			Fundamental
FLX1305	Optional course 3	5	2	1	0	3	6	9		C		Speciality
TOTAL		30	13	7	6	26	27	53	4	1	0	

YEAR II / SEMESTER 4												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLR1401	Atomic physics	6	2	1	1	4	7	11	E			Fundamental
FLR1402	Electrodynamics	6	2	2	0	4	7	11	E			Fundamental
FLR1403	Nuclear physics	5	2	1	1	4	5	9	E			Fundamental
FLR1404	Quantum mechanics	6	3	2	0	5	6	11	E			Fundamental
FLR1405	Traineeship	2	0	0	4	4	0	4		C		Speciality
FLX1406	Optional course 4	5	2	1	1	4	5	9		C		Fundamental
TOTAL		30	11	7	7	25	30	55	4	2	0	

YEAR III / SEMESTER 5												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLR1501	Physics of Molecule	5	2	1	1	4	5	9	E			Fundamental
FLR1502	Statistical Physics	5	2	2	0	4	5	9	E			Fundamental
FLR1503	Solid State Phycis	5	2	2	1	5	4	9	E			Fundamental
FLR1504	Spectroscopy and Lasers	5	2	1	1	4	5	9	E			Fundamental
FLR1505	Plasma Physics and Applications	5	2	1	1	4	5	9	E			Fundamental
FLX1506	Optional course 5	5	2	1	1	4	5	9		C		Speciality
TOTAL		30	12	8	5	25	29	54	5	1	0	

YEAR III / SEMESTER 6												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLR1601	Physics of Semiconductors	5	2	1	1	4	6	10	E			Fundamental
FLR1602	Nummerical and Simmulation Methods in Physics	5	2	0	2	4	6	10	E			Fundamental
FLR1603	Subatomic Particles	5	2	1	1	4	6	10	E			Speciality
FLR1604	Physics and Technology of Magnetic Materials	5	2	1	1	4	6	10	E			Speciality
FLR1605	Traineeship in the Area of Study	2	0	0	2	2	2	4		C		Speciality
FLX1606	Optional course 6	5	2	1	1	4	6	10		C		Speciality
FLR1607	Bachelor Thesis writing	3	0	0	2	2	4	6			VP	Speciality
TOTAL		30	10	4	10	24	36	60	4	2	1	

COURSES OPTIONAL												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
OPTIONAL COURSE 1 (Year I, Semester 1) package FLX1105												
FLR1107	Computer Aided Physics	5	2	0	2	4	5	9		C		Speciality
FLR5105	Computer Aided Design. Technical Drawing	5	2	0	2	4	5	9		C		Speciality
FLR3108	Bioinformatics and medical statistics	5	2	0	2	4	5	9		C		Speciality
OPTIONAL COURSE 1 (Year I, Semester 2) package FLX1204												
XLX0202	Optional cours held at an other Faculty	5	2	1	0	3	6	9		C		Complementary
FLR5206	Oscillations and Waves	5	2	1	0	3	6	9		C		Speciality
FLR1206	Physics and the Evolution of Knowledge	5	2	1	0	3	6	9		C		Speciality
OPTIONAL COURSE 3 (Year II, Semester 3) package FLX1305												
FLR1306	Interdisciplinary Applications of Physics	5	2	0	1	3	6	9		C		Speciality
XLX0203	Optional cours held at an other Faculty	5	2	1	0	3	6	9		C		Complementary
FLR3306	Biophysics and Biochemistry	5	2	1	0	3	6	9		C		Speciality
OPTIONAL COURSE 4 (Year II, Semester 4) package FLX1407												
FLR1407	Physics of Fluids	5	2	1	1	4	5	9		C		Speciality
FLR5405	Electrotechnics	5	2	1	1	4	5	9		C		Speciality
FLR5603	Systems and Instrumentation with Sensors	5	2	1	1	4	5	9		C		Speciality
OPTIONAL COURSE 5 (Year III, Semester 5) package FLX1506												
FLR2504	Virtual Instrumentation	5	2	1	1	4	5	9		C		Speciality
FLR5707	Modern methods and technics of microscopic analysis	5	2	1	1	4	5	9		C		Speciality
OPTIONAL COURSE 6 (Year III, Semester 6) package FLX1606												
FLR1608	Astrophysics and Cosmology	5	2	1	0	3	7	10		C		Speciality
FLR5403	Microprocessors. Computers	5	2	0	2	4	6	10		C		Speciality
Credits / Hours / Week / Assesment / % from total number of courses		30	12	4	5	21	34	55	0	6	0	12.24%
Hours / week - Hours for study / week			164	54	70	288	462	750				
			288			750						

OPTIONS FOR FOREIGN LANGUAGE 1 & 2

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Foreign Language 1 (Year I, Semester 1)												
LLU0011	English (1)	3	0	2	0	2	3	5		C		Complementary
LLU0021	French (1)	3	0	2	0	2	3	5		C		Complementary
LLU0031	German (1)	3	0	2	0	2	3	5		C		Complementary
Foreign Language 2 (Year I, Semester 2)												
LLU0012	English (2)	3	0	2	0	2	3	5		C		Complementary
LLU0022	French (2)	3	0	2	0	2	3	5		C		Complementary
LLU0032	German (2)	3	0	2	0	2	3	5		C		Complementary

FACULTATIVE COURSES

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Year I, Semester 1												
PLR0101	Psychology	5	2	2	0	4	5	9		C		Complementary
Year I, Semester 2												
PLR0102	Pedagogy I	5	2	2	0	4	5	9		C		Complementary
Year II, Semester 3												
LLU0#3	Foreign Language 3 (diferrent from that in Year I, Sem.1)	3	0	2	0	2	3	5		C		Complementary
PLR0302	Pedagogy II	5	2	2	0	4	5	9		C		Complementary
Year II, Semester 4												
LLU00#4	Foreign Language 4 (diferrent from that in Year I, Sem.2)	3	0	2	0	2	3	5		C		Complementary
PLR0402	Didactics of Speciality	5	2	2	0	4	5	9		C		Complementary
Year III, Semester 5												
PLR0501	Pedagogical Traineeship 1	3	0	0	3	3	2	5		C		Complementary
PLR0502	IAC	2	1	1	0	2	2	4		C		Complementary
Year III, Semester 6												
PLR0601	Pedagogical Traineeship 2	2	0	0	3	3	1	4		C		Complementary
PLR0602	Class management	3	1	1	0	2	4	6		C		Complementary
Credits / Hours / Week / Assesment / % from total number of courses		21	4	8	6	18	19	37	0	6	0	14.29%
Hours / week - Hours for study / week			56	112	78	246	264	510				
			246			510						

Appendix to the Curriculum for Programme of Study: PHYSICS

FUNDAMENTAL COURSES (Fundamental)												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Semestrele 1 - 5 (14 weeks)												
FLR1103	Mecanics and Acoustics	8	3	2	2	7	7	14	E			Fundamental
FLR1201	Heat	8	3	2	2	7	7	14	E			Fundamental
FLR1203	Electricity and Magnetism	8	3	2	2	7	7	14	E			Fundamental
FLR1301	Optics	8	3	2	2	7	7	14	E			Fundamental
FLR1302	Electronics	8	3	2	2	7	7	14	E			Fundamental
FLR1303	Fundamentals of Theoretical Physics	6	3	2	0	5	6	11	E			Fundamental
FLR1304	Applied Informatics in Physics	3	2	0	2	4	1	5	E			Fundamental
FLR1401	Atomic physics	6	2	1	1	4	7	11	E			Fundamental
FLR1401	Atomic physics	6	2	1	1	4	7	11	E			Fundamental
FLR1403	Nuclear physics	5	2	1	1	4	5	9	E			Fundamental
FLR1404	Quantum mechanics	6	3	2	0	5	6	11	E			Fundamental
FLR1501	Physics of Molecule	5	2	1	1	4	5	9	E			Fundamental
FLR1502	Statistical Physics	5	2	2	0	4	5	9	E			Fundamental
FLR1503	Solid State Physcis	5	2	2	1	5	4	9	E			Fundamental
FLR1504	Spectroscopy and Lasers	5	2	1	1	4	5	9	E			Fundamental
FLR1505	Plasma Physics and Applications	5	2	1	1	4	5	9	E			Fundamental
TOTAL		97	39	24	19	82	91	173	16	0	0	
Semester 6 (12 weeks)												
FLR1601	Physics of Semiconductors	5	2	1	1	4	6	10	E			Fundamental
FLR1602	Numnerical and Simmulation Methods in Physics	5	2	0	2	4	6	10	E			Fundamental
TOTAL		10	4	1	3	8	12	20	2	0	0	
Credits / Hours / Week / Assesment / % from total number of courses		107	43	25	22	90	103	193	18	0	0	36.73%
Hours / week - Hours for study / week			594	348	302	1244	1418	2662				
			1244			2662						

SPECIALITY COURSES (Speciality)												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Semestrele 1 - 5 (14 weeks)												
FLX1105	Optional course 1	5	2	0	2	4	5	9		C		Speciality
FLR1202	Differential Equations of Theoretical Physics	6	2	2	0	4	7	11	E			Speciality
FLX1204	Optional course 2	5	2	1	0	3	6	9		C		Speciality
FLX1305	Optional course 3	5	2	1	0	3	6	9		C		Speciality
FLR1405	Traineeship	2	0	0	4	4	0	4		C		Speciality
FLX1406	Optional course 4	5	2	1	1	4	5	9		C		Speciality
FLX1506	Optional course 5	5	2	1	1	4	5	9		C		Speciality
TOTAL		33	12	6	8	26	34	60	1	6	0	
Semester 6 (12 weeks)												
FLR1603	Subatomic Particles	5	2	1	1	4	6	10	E			Speciality
FLR1604	Physics and Technology of Magnetic Materials	5	2	1	1	4	6	10	E			Speciality
FLR1605	Traineeship in the Area of Study	2	0	0	2	2	2	4		C		Speciality
FLX1606	Optional course 6	5	2	1	1	4	6	10		C		Speciality
FLR1607	Bachelor Thesis writing	3	0	0	2	2	4	6			VP	Speciality
TOTAL		20	6	3	7	16	24	40	2	2	1	
Credits / Hours / Week / Assesment / % from total number of courses		53	18	9	15	42	58	100	3	8	1	24.49%
Hours / week - Hours for study / week			240	120	196	556	764	1320				
			556			1320						

COMPLEMENTARY COURSES (Complementary)

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Semestrele 1 - 5 (14 weeks)												
MLR1101	Algebra	5	2	2	0	4	5	9	E			Complementary
MLR1102	Mathematical Analysis	5	2	2	0	4	5	9	E			Complementary
CLR1104	Chemistry	4	2	0	1	3	4	7	E			Complementary
FLX1106	Foreign Language 1	3	0	2	0	2	3	5		C		Complementary
YLU0011	Sports 1	0	0	2	0	2	0	2			VP	Complementary
FLX1205	Foreign Language 2	3	0	2	0	2	3	5		C		Complementary
YLU0012	Sports 2	0	0	2	0	2	0	2			VP	Complementary
TOTAL		20	6	12	1	19	20	39	3	2	2	
Semester 6 (12 weeks)												
												Complementary
TOTAL		0	0	0	0	0	0	0	0	0	0	
Credits / Hours / Week / Assesment / % from total number of courses		20	6	12	1	19	20	39	3	2	2	14.29%
Hours / week - Hours for study / week			84	168	14	266	280	546				
			266			546						

FACULTATIVE COURSES												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Semestrel 1 - 5 (14 weeks)												
PLR0101	Psychology	5	2	2	0	4	5	9		C		Complementary
PLR0102	Pedagogy I	5	2	2	0	4	5	9		C		Complementary
LLU00#3	Foreign Language 3 (diferrent from that in Year I, Sem.1)	3	0	2	0	2	3	5		C		Complementary
PLR0302	Pedagogy II	5	2	2	0	4	5	9		C		Complementary
LLU00#4	Foreign Language 4 (diferrent from that in Year I, Sem.2)	3	0	2	0	2	3	5		C		Complementary
PLR0402	Didactics of Speciality	5	2	2	0	4	5	9		C		Complementary
PLR0501	Pedagogical Traineeship 1	3	0	0	3	3	2	5		C		Complementary
PLR0502	IAC	2	1	1	0	2	2	4		C		Complementary
TOTAL		31	9	13	3	25	30	55	0	8	0	
Semester 6 (12 weeks)												
PLR0601	Pedagogical Traineeship 2	2	0	0	3	3	1	4		C		Complementary
PLR0602	Class management	3	1	1	0	2	4	6		C		Complementary
TOTAL		5	1	1	3	5	5	10	0	2	0	
Credits / Hours / Week / Assesment / % from total number of courses		36	10	14	6	30	35	65	0	10	0	12.24%
Hours / week - Hours for study / week			138	194	78	410	480	890				
			410			890						

OVERALL BALANCE

CODE	COURSES	HOURS	Hours for study / week			%	NUMBER OF CREDITS		
			F	I	T		YEAR I	YEAR II	YEAR III
1	COMPULSORY	130	130	147	277	86%	50	50	50
2	OPTIONAL	21	21	34	55	14%	10	10	10
TOTAL		151	151	181	332	100%	0	60	60

CURRICULUM starting from Academic year 2015-2016**BABEȘ-BOLYAI UNIVERSITY****FACULTY OF PHYSICS**

Field of study: PHYSICS

Programme of study: PHYSICS WITH COMPUTER SCIENCE

Language of instruction: ROMANIAN

Name of qualification: BACHELOR IN PHYSICS

Duration of study: 6 SEMESTERS

Type of study: FULL TIME

I. DEGREE STRUCTURE

180 credits, whereof:

150 credits for compulsory courses

including 6 credits for a foreign language (2 semesters), no credits for passing the test for subject

30 credits for optional course

and

20 credits for Bachelor exam

II. STRUCTURE OF PROGRAMME (in weeks)

	Courses given		Examination period			Traineeship	Holiday		
	Sem I	Sem II	Winter	Spring	Summer		Winter	Spring	Summer
Year I	14	14	3	3	2	0	3	1	12
Year II	14	14	3	3	2	2	3	1	10
Year III	14	12	3	2	2	2	3	1	13

REMARKS

Traineeship in Semester 4 is organized after Summer examination period

In Semester 6 Traineeship is organized during Semester

The examination period at the end of the Semester 6 is followed by 2 weeks consecrated to preparing Bachelor exams.

III. WEEKLY STRUCTURE OF THE PROGRAMME (in hours)

	Semester I	Semester II
Year I	26	25
Year II	26	25
Year III	24	25

IV. BACHELOR EXAM - between 25 June - 6 July

Part 1: Basic and speciality knowledge exam = 10 credits

Part 2: Bachelor thesis = 10 credits

V. SELECTION OF OPTIONAL COURSES:

Sem. 1: choosing 1 course from package: FLX2105

Sem. 2: choosing 1 course from package: FLX2204

Sem. 3: choosing 1 course from package: FLX2305

Sem. 4: choosing 1 course from package: FLX2406

Sem. 5: choosing 1 course from package: FLX2506

Sem. 6: choosing 1 course from package: FLX2604

For a maximum of 3 optional courses, it is allowed for every student to select any course held at any other Faculty of the Babeș-Bolyai University.

In order to fill a teaching position the graduate must obtain a Certificate issued by the Department of Teacher Training

VI. SIMILAR PROGRAMMES:

Universite d'Orleans, France

Universite Joseph Fourier Grenoble, France

Universitat Osnabruck, Germany

Universita degli Studi di Prama, Italy

Universidad de Zaragosa, Spain

University of Oxford, UK

University of Cambridge, UK

VII. COURSES

YEAR I / SEMESTER 1

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
MLR1101	Algebra	5	2	2	0	4	5	9	E			Complementary
MLR1102	Mathematical Analysis	5	2	2	0	4	5	9	E			Complementary
FLR1103	Mecanics and Acoustics	8	3	2	2	7	7	14	E			Fundamental
CLR1104	Chemistry	4	2	0	1	3	4	7	E			Complementary
FLX2105	Optional course 1	5	2	0	2	4	5	9		C		Fundamental
FLX1106	Foreign Language 1	3	0	2	0	2	3	5		C		Complementary
YLU0011	Sports 1	0	0	2	0	2	0	2			VP	Complementary
TOTAL		30	11	10	5	26	29	55	4	2	1	

YEAR I / SEMESTER 2

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLR1201	Heat	8	3	2	2	7	7	14	E			Fundamental
FLR1202	Differential Equations of Theoretical Physics	6	2	2	0	4	7	11	E			Fundamental
FLR1203	Electricity and Magnetism	8	3	2	2	7	7	14	E			Fundamental
FLX2204	Optional course 2	5	2	1	0	3	6	9		C		Complementary
FLX1205	Foreign Language 2	3	0	2	0	2	3	5		C		Complementary
YLU0012	Sports 2	0	0	2	0	2	0	2			VP	Complementary
TOTAL		30	10	11	4	25	30	55	3	2	1	

YEAR II / SEMESTER 3

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLR1301	Optics	8	3	2	2	7	7	14	E			Fundamental
FLR1302	Electronics	8	3	2	2	7	7	14	E			Fundamental
FLR1303	Fundamentals of Theoretical Physics	6	3	2	0	5	6	11	E			Fundamental
FLR1304	Applied Informatics in Physics	4	2	0	2	4	3	7	E			Fundamental
FLX2305	Optional course 3	4	2	1	0	3	4	7		C		Speciality
TOTAL		30	13	7	6	26	27	53	4	1	0	

YEAR II / SEMESTER 4

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLR1401	Atomic physics	6	2	1	1	4	7	11	E			Fundamental
FLR1402	Electrodynamics	6	2	2	0	4	7	11	E			Fundamental
FLR1403	Nuclear physics	6	2	1	1	4	7	11	E			Fundamental
FLR1404	Quantum mechanics	6	3	2	0	5	6	11	E			Fundamental
FLR2405	Traineeship	2	0	0	4	4	0	4		C		Speciality
FLX2406	Optional course 4	4	2	1	1	4	3	7		C		Fundamental
TOTAL		30	11	7	7	25	30	55	4	2	0	

YEAR III / SEMESTER 5

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLR1501	Physics of Molecule	5	2	1	1	4	5	9	E			Fundamental
FLR1502	Statistical Physics	5	2	2	0	4	5	9	E			Fundamental
FLR1503	Solid State Phycis	5	2	2	1	5	4	9	E			Fundamental
FLR2504	Virtual Instrumentation	5	2	0	1	3	6	9	E			Fundamental
MLR5027	Databases	5	2	1	1	4	5	9	E			Speciality
FLR2506	Optional course 5	5	2	1	1	4	5	9		C		Speciality
TOTAL		30	12	7	5	24	30	54	5	1	0	

YEAR III / SEMESTER 6

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLR1601	Physics of Semiconductors	5	2	1	1	4	6	10	E			Fundamental
FLR1602	Nummerical and Simmulation Methods in Physics	5	2	0	2	4	6	10	E			Fundamental
MLR5002	Computers Networks and Administartion	5	2	1	2	5	5	10	E			Speciality
MLR5007	Operating Systems	5	2	1	1	4	6	10	E			Speciality
FLR2603	Traineeship in the Area of Study	2	0	0	2	2	2	4		C		Speciality
FLR2604	Optional course 6	5	2	1	1	4	6	10		C		Speciality
FLR2605	Bachelor Thesis writing	3	0	0	2	2	4	6			VP	Speciality
TOTAL		30	10	4	11	25	35	60	4	2	1	

COURSES OPTIONAL												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
OPTIONAL COURSE 1 (Year I, Semester 1) package FLX2105												
FLR1107	Computer Aided Physics	5	2	0	2	4	5	9		C		Fundamental
FLR5105	Computer Aided Design. Technical Drawing	5	2	0	2	4	5	9		C		Fundamental
MLR5005	Fundamentele programării	5	2	2	2	6	3	9		C		Fundamental
OPTIONAL COURSE 1 (Year I, Semester 2) package FLX2204												
MLR5022	Data structure and Algorithms	5	2	1	0	3	6	9		C		Speciality
FLR5206	Oscillations and Waves	5	2	1	0	3	6	9		C		Speciality
FLR1206	Physics and the Evolution of Knowledge	5	2	1	0	3	6	9		C		Speciality
OPTIONAL COURSE 3 (Year II, Semester 3) package FLX2305												
FLR1306	Interdisciplinary Applications of Physics	5	2	0	1	3	6	9		C		Speciality
XLX0303	Optional cours held at an other Faculty	5	2	1	0	3	6	9		C		Speciality
OPTIONAL COURSE 4 (Year II, Semester 4) package FLX2406												
FLR1407	Physics of Fluids	5	2	1	1	4	5	9		C		Speciality
FLR5405	Electrotechnics	5	2	1	1	4	5	9		C		Speciality
FLR5603	Systems and Instrumentation with Sensors	5	2	1	1	4	5	9		C		Speciality
OPTIONAL COURSE 5 (Year III, Semester 5) package FLX2506												
MMP0003	Probabilități și statistică matematică	5	2	1	1	4	5	9		C		Speciality
FLR3108	Bioinformatics and medical statistics	5	2	0	2	4	5	9		C		Speciality
MLR5078	Programarea dispozitivelor mobile	5	2	1	1	4	5	9		C		Speciality
OPTIONAL COURSE 6 (Year III, Semester 6) package FLX2604												
FLR1608	Astrophysics and Cosmology	5	2	1	0	3	7	10		C		Speciality
FLR5403	Microprocessors. Computers	5	2	0	2	4	6	10		C		Speciality
Credits / Hours / Week / Assesment / % from total number of courses		30	12	4	5	21	34	55	0	6	0	12.24%
Hours / week - Hours for study / week			164	54	70	288	462	750				
			288			750						

OPTIONS FOR FOREIGN LANGUAGE 1 & 2

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Foreign Language 1 (Year I, Semester 1)												
LLU0011	English (1)	3	0	2	0	2	3	5		C		Complementary
LLU0021	French (1)	3	0	2	0	2	3	5		C		Complementary
LLU0031	German (1)	3	0	2	0	2	3	5		C		Complementary
Foreign Language 2 (Year I, Semester 2)												
LLU0012	English (2)	3	0	2	0	2	3	5		C		Complementary
LLU0022	French (2)	3	0	2	0	2	3	5		C		Complementary
LLU0032	German (2)	3	0	2	0	2	3	5		C		Complementary

FACULTATIVE COURSES

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Year I, Semester 1												
PLR0101	Psychology	5	2	2	0	4	5	9		C		Complementary
Year I, Semester 2												
PLR0102	Pedagogy I	5	2	2	0	4	5	9		C		Complementary
Year II, Semester 3												
LLU0#3	Foreign Language 3 (diferrent from that in Year I, Sem.1)	3	0	2	0	2	3	5		C		Complementary
PLR0302	Pedagogy II	5	2	2	0	4	5	9		C		Complementary
Year II, Semester 4												
LLU00#4	Foreign Language 4 (diferrent from that in Year I, Sem.2)	3	0	2	0	2	3	5		C		Complementary
PLR0402	Didactics of Speciality	5	2	2	0	4	5	9		C		Complementary
Year III, Semester 5												
PLR0501	Pedagogical Traineeship 1	3	0	0	3	3	2	5		C		Complementary
PLR0502	IAC	2	1	1	0	2	2	4		C		Complementary
Year III, Semester 6												
PLR0601	Pedagogical Traineeship 2	2	0	0	3	3	1	4		C		Complementary
PLR0602	Class management	3	1	1	0	2	4	6		C		Complementary
Credits / Hours / Week / Assesment / % from total number of courses		21	4	8	6	18	19	37	0	6	0	12.24%
Hours / week - Hours for study / week			56	112	78	246	264	510				
			246			510						

Appendix to the Curriculum for Programme of Study: PHYSICS WITH COMPUTER SCIENCE

FUNDAMENTAL COURSES (Fundamental)												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Semestrele 1 - 5 (14 weeks)												
FLR1103	Mecanics and Acoustics	8	3	2	2	7	7	14	E			Fundamental
FLX2105	Optional course 1	5	2	0	2	4	5	9		C		Fundamental
FLR1201	Heat	8	3	2	2	7	7	14	E			Fundamental
FLR1202	Differential Equations of Theoretical Physics	6	2	2	0	4	7	11	E			Fundamental
FLR1203	Electricity and Magnetism	8	3	2	2	7	7	14	E			Fundamental
FLR1301	Optics	8	3	2	2	7	7	14	E			Fundamental
FLR1302	Electronics	8	3	2	2	7	7	14	E			Fundamental
FLR1303	Fundamentals of Theoretical Physics	6	3	2	0	5	6	11	E			Fundamental
FLR1304	Applied Informatics in Physics	4	2	0	2	4	3	7	E			Fundamental
FLR1401	Atomic physics	6	2	1	1	4	7	11	E			Fundamental
FLR1402	Electrodynamics	6	2	2	0	4	7	11	E			Fundamental
FLR1403	Nuclear physics	6	2	1	1	4	7	11	E			Fundamental
FLR1404	Quantum mechanics	6	3	2	0	5	6	11	E			Fundamental
FLR1501	Physics of Molecule	5	2	1	1	4	5	9	E			Fundamental
FLR1502	Statistical Physics	5	2	2	0	4	5	9	E			Fundamental
FLR1503	Solid State Physcis	5	2	2	1	5	4	9	E			Fundamental
FLR2504	Virtual Instrumentation	5	2	0	1	3	6	9	E			Fundamental
TOTAL		105	41	25	19	85	103	188	16	1	0	
Semester 6 (12 weeks)												
FLR1601	Physics of Semiconductors	5	2	1	1	4	6	10	E			Fundamental
FLR1602	Nummerical and Simmulation Methods in Physics	5	2	0	2	4	6	10	E			Fundamental
TOTAL		10	4	1	3	8	12	20	2	0	0	
Credits / Hours / Week / Assesment / % from total number of courses		115	45	26	22	93	115	208	18	1	0	38.78%
Hours / week - Hours for study / week			622	362	302	1286	1586	2872				
			1286			2872						

SPECIALITY COURSES (Speciality)

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Semestrel 1 - 5 (14 weeks)												
FLX2204	Optional course 2	5	2	1	0	3	6	9		C		Speciality
FLX2305	Optional course 3	4	2	1	0	3	4	7		C		Speciality
FLR2405	Traineeship	2	0	0	4	4	0	4		C		Speciality
FLX2406	Optional course 4	4	2	1	1	4	3	7		C		Speciality
MLR5027	Databases	5	2	1	1	4	5	9	E			Speciality
FLR2506	Optional course 5	5	2	1	1	4	5	9		C		Speciality
TOTAL		20	8	4	7	19	17	36	1	4	0	
Semester 6 (12 weeks)												
MLR5002	Computers Networks and Administartion	5	2	1	2	5	5	10	E			Speciality
MLR5007	Operating Systems	5	2	1	1	4	6	10	E			Speciality
FLR2603	Traineeship in the Area of Study	2	0	0	2	2	2	4		C		Speciality
FLR2604	Optional course 6	5	2	1	1	4	6	10		C		Speciality
FLR2605	Bachelor Thesis writing	3	0	0	2	2	4	6			VP	Speciality
TOTAL		20	6	3	8	17	23	40	2	2	1	
Credits / Hours / Week / Assesment / % from total number of courses		40	14	7	15	36	40	76	3	6	1	22.45%
Hours / week - Hours for study / week			184	92	194	470	514	984				
			470			984						

COMPLEMENTARY COURSES (Complementary)												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Semestrel 1 - 5 (14 weeks)												
MLR1101	Algebra	5	2	2	0	4	5	9	E			Complementary
MLR1102	Mathematical Analysis	5	2	2	0	4	5	9	E			Complementary
CLR1104	Chemistry	4	2	0	1	3	4	7	E			Complementary
FLX1106	Foreign Language 1	3	0	2	0	2	3	5		C		Complementary
YLU0011	Sports 1	0	0	2	0	2	0	2			VP	Complementary
FLX1205	Foreign Language 2	3	0	2	0	2	3	5		C		Complementary
YLU0012	Sports 2	0	0	2	0	2	0	2			VP	Complementary
TOTAL		20	6	12	1	19	20	39	3	2	2	
Semester 6 (12 weeks)												
												Complementary
TOTAL		0	0	0	0	0	0	0	0	0	0	
Credits / Hours / Week / Assesment / % from total number of courses		20	6	12	1	19	20	39	3	2	2	14.29%
Hours / week - Hours for study / week			84	168	14	266	280	546				
			266			546						

FACULTATIVE COURSES

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Semestrel 1 - 5 (14 weeks)												
PLR0101	Psychology	5	2	2	0	4	5	9		C		Complementary
PLR0102	Pedagogy I	5	2	2	0	4	5	9		C		Complementary
LLU00#3	Foreign Language 3 (diferrent from that in Year I, Sem.1)	3	0	2	0	2	3	5		C		Complementary
PLR0302	Pedagogy II	5	2	2	0	4	5	9		C		Complementary
LLU00#4	Foreign Language 4 (diferrent from that in Year I, Sem.2)	3	0	2	0	2	3	5		C		Complementary
PLR0402	Didactics of Speciality	5	2	2	0	4	5	9		C		Complementary
PLR0501	Pedagogical Traineeship 1	3	0	0	3	3	2	5		C		Complementary
PLR0502	IAC	2	1	1	0	2	2	4		C		Complementary
TOTAL		31	9	13	3	25	30	55	0	8	0	
Semester 6 (12 weeks)												
PLR0601	Pedagogical Traineeship 2	2	0	0	3	3	1	4		C		Complementary
PLR0602	Class management	3	1	1	0	2	3	5		C		Complementary
TOTAL		5	1	1	3	5	4	9	0	2	0	
Credits / Hours / Week / Assesment / % from total number of courses		36	10	14	6	30	34	64	0	10	0	12.24%
Hours / week - Hours for study / week			138	194	78	410	468	878				
			410			878						

OVERALL BALANCE

CODE	COURSES	HOURS	Hours for study / week			%	NUMBER OF CREDITS		
			F	I	T		YEAR I	YEAR II	YEAR III
1	COMPULSORY	130	130	147	277	86%	50	50	50
2	OPTIONAL	21	21	34	55	14%	10	10	10
	TOTAL	151	151	181	332	6100%	60	60	60

CURRICULUM starting from Academic year 2015-2016**BABEȘ-BOLYAI UNIVERSITY****FACULTY OF PHYSICS**

Field of study: PHYSICS

Programme of study: MEDICAL PHYSICS

Language of instruction: ROMANIAN

Name of qualification: BACHELOR IN PHYSICS

Duration of study: 6 SEMESTERS

Type of study: FULL TIME

I. DEGREE STRUCTURE

180 credits, whereof:

150 credits for compulsory courses

including 6 credits for a foreign language (2 semesters),

no credits for passing the test for subject Sports

30 credits for optional course

and

20 credits for Bachelor exam

II. STRUCTURE OF PROGRAMME (in weeks)

	Courses given		Examination period			Traineeship	Holiday		
	Sem I	Sem II	Winter	Spring	Summer		Winter	Spring	Summer
Year I	14	14	3	3	2	0	3	1	12
Year II	14	14	3	3	2	2	3	1	10
Year III	14	12	3	2	2	2	3	1	13

REMARKS

Traineeship in Semester 4 is organized after Summer examination period

In Semester 6 Traineeship is organized during Semester

The examination period at the end of the Semester 6 is followed by 2 weeks consecrated to preparing Bachelor exams.

III. WEEKLY STRUCTURE OF THE PROGRAMME (in hours)

	Semester I	Semester II
Year I	26	25
Year II	26	26
Year III	24	24

IV. BACHELOR EXAM - between 25 June - 6 July

Part 1: Basic and speciality knowledge exam = 10 credits

Part 2: Bachelor thesis = 10 credits

V. SELECTION OF OPTIONAL COURSES:

Sem. 1: choosing 1 course from package: FLX3105

Sem. 2: choosing 1 course from package: FLX3204

Sem. 3: choosing 1 course from package: FLX3305

Sem. 4: choosing 1 course from package: FLX3407

Sem. 5: choosing 1 course from package: FLX3508

Sem. 6: choosing 1 course from package: FLX3604

For a maximum of 3 optional courses, it is allowed for every student to select any course held at any other Faculty of the Babeș-Bolyai University.

In order to fill a teaching position the graduate must obtain a Certificate issued by the Department of Teacher Training

VI. SIMILAR PROGRAMMES:

Universite d'Orleans, France

Universite Joseph Fourier Grenoble, France

University of Cantenbury, UK

Universita degli Studi di Prama, Italy

Uppsala University, Sweden

University of Oxford, UK

University of Cambridge, UK

VII. COURSES

YEAR I / SEMESTER 1												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
MLR1101	Algebra	5	2	2	0	4	5	9	E			Complementary
MLR1102	Mathematical Analysis	5	2	2	0	4	5	9	E			Complementary
FLR3103	Mecanics and Acoustics	6	2	1	1	4	7	11	E			Fundamental
CLR1104	Chemistry	4	2	0	1	3	4	7	E			Complementary
FLX3105	Optional course 1	5	2	0	2	4	5	9		C		Speciality
FLX1106	Foreign Language 1	3	0	2	0	2	3	5		C		Complementary
FLR3107	Human Anatomy and Physiology	2	2	1	0	3	1	4		C		Speciality
YLU0011	Sports 1	0	0	2	0	2	0	2			VP	Complementary
TOTAL		30	12	10	4	26	30	56	4	3	1	

YEAR I / SEMESTER 2												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLR1201	Heat	8	3	2	2	7	7	14	E			Fundamental
FLR1202	Differential Equations of Theoretical Physics	6	2	2	0	4	7	11	E			Fundamental
FLR3203	Electricity and Magnetism	6	2	1	1	4	7	11	E			Fundamental
FLX3204	Optional course 2	5	2	1	0	3	6	9		C		Speciality
FLX1205	Foreign Language 2	3	0	2	0	2	3	5		C		Complementary
FLR3206	Biomechanics	2	2	1	0	3	1	4	E			Speciality
YLU0012	Sports 2	0	0	2	0	2	0	2			VP	Complementary
TOTAL		30	11	11	3	25	31	56	4	2	1	

YEAR II / SEMESTER 3												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLR3301	Optics	5	2	1	1	4	5	9	E			Fundamental
FLR3302	Electronics	5	2	1	1	4	5	9	E			Fundamental
FLR1303	Fundamentals of Theoretical Physics	5	2	2	0	4	5	9	E			Speciality
FLR1304	Applied Informatics in Physics	3	2	0	2	4	1	5	E			Speciality
FLX3305	Optional course 3	5	2	1	1	4	5	9		C		Speciality
FLR3306	Biophysics and Biochemistry	5	2	1	0	3	6	9	E			Speciality
FLR3307	Bioelectromagnetism	2	2	1	0	3	1	4	E			Speciality
TOTAL		30	14	7	5	26	28	54	6	1	0	

YEAR II / SEMESTER 4												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLR1401	Atomic physics	5	2	1	1	4	5	9	E			Fundamental
FLR3402	Optometrie și microscopie Optics	5	2	1	1	4	5	9	E			Speciality
FLR1403	Nuclear physics	5	2	1	1	4	5	9	E			Fundamental
FLR3404	Quantum mechanics	5	2	2	0	4	5	9	E			Fundamental
FLR3405	Fundamentals of Molecular Spectroscopy	3	2	0	1	3	2	5		C		Speciality
FLR3406	Traineeship	2	0	0	4	4	0	4		C		Speciality
FLX3407	Optional course 4	5	2	1	0	3	6	9		C		Speciality
TOTAL		30	12	6	8	26	28	54	4	3	0	

YEAR III / SEMESTER 5												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLR1501	Physics of Molecule	5	2	1	1	4	5	9	E			Fundamental
FLR1502	Statistical Physics	5	2	2	0	4	5	9	E			Fundamental
FLR3503	Solid State Physcis	5	2	1	1	4	5	9	E			Fundamental
FLR3506	Medical Apparatus	5	2	1	1	4	5	9	E			Speciality
FLR3507	Nuclear Medicine	5	2	1	1	4	5	9	E			Speciality
FLX3508	Optional course 5	5	2	1	1	4	5	9		C		Speciality
TOTAL		30	12	7	5	24	30	54	5	1	0	

YEAR III / SEMESTER 6

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLR1601	Physics of Semiconductors	5	2	1	1	4	6	10	E			Fundamental
FLR3602	Numerical and Analogical Modelling of Biological Processes	5	2	1	1	4	6	10	E			Speciality
FLR3603	Traineeship in the Area of Study	2	0	0	2	2	2	4		C		Speciality
FLX3604	Optional course 6	5	2	1	1	4	6	10		C		Speciality
FLR3605	Radiology and Medical Imaging	5	2	1	1	4	6	10	E			Speciality
FLR3606	Detectors, Dosimetry and Radioprotection	5	2	1	1	4	6	10	E			Speciality
FLR3607	Bachelor Thesis writing	3	0	0	2	2	4	6			VP	Speciality
TOTAL		30	10	5	9	24	36	60	4	2	1	

COURSES OPTIONAL

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
OPTIONAL COURSE 1 (Year I, Semester 1) package FLX3105												
FLR1107	Computer Aided Physics	5	2	0	2	4	5	9		C		Speciality
FLR5105	Computer Aided Design. Technical Drawing	5	2	0	2	4	5	9		C		Speciality
FLR3108	Bioinformatics and medical statistics	5	2	0	2	4	5	9		C		Speciality
OPTIONAL COURSE 1 (Year I, Semester 2) package FLX3204												
XLX0202	Optional cours held at an other Faculty	5	2	1	0	3	6	9		C		Speciality
FLR5206	Oscillations and Waves	5	2	1	0	3	6	9		C		Speciality
FLR1206	Physics and the Evolution of Knowledge	5	2	1	0	3	6	9		C		Speciality
OPTIONAL COURSE 3 (Year II, Semester 3) package FLX3305												
FLR1306	Interdisciplinary Applications of Physics	5	2	0	1	3	6	9		C		Speciality
XLX0303	Optional cours held at an other Faculty	5	2	1	0					C		Speciality
OPTIONAL COURSE 4 (Year II, Semester 4) package FLX3407												
FLR1407	Physics of Fluids	5	2	0	1	3	6	9		C		Speciality
FLR3408	Electrodynamics	5	2	1	1	4	5	9		C		Speciality
FLR5603	Systems and Instrumentation with Sensors	5	2	1	1	4	5	9		C		Speciality
OPTIONAL COURSE 5 (Year III, Semester 5) package FLX3508												
FLR2504	Virtual Instrumentation	5	2	1	1	4	5	9		C		Speciality
FLR5707	Modern methods and technics of microscopic analysis	5	2	1	1	4	5	9		C		Speciality
OPTIONAL COURSE 6 (Year III, Semester 6) package FLX3604												
FLR5602	Technological Applications of Lasers. Biophotonics	5	2	1	1	4	6	10		C		Speciality
FLR1608	Astrophysics and Cosmology	5	2	1	0	3	7	10		C		Speciality
Credits / Hours / Week / Assesment / % from total number of courses		30	12	3	6	21	34	55	0	6	0	11.32%
Hours / week - Hours for study / week			164	40	82	286	464	750				
			286			750						

OPTIONS FOR FOREIGN LANGUAGE 1 & 2

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Foreign Language 1 (Year I , Semester 1)												
LLU0011	English (1)	3	0	2	0	2	3	5		C		Complementary
LLU0021	French (1)	3	0	2	0	2	3	5		C		Complementary
LLU0031	German (1)	3	0	2	0	2	3	5		C		Complementary
Foreign Language 2 (Year I , Semester 2)												
LLU0012	English (2)	3	0	2	0	2	3	5		C		Complementary
LLU0022	French (2)	3	0	2	0	2	3	5		C		Complementary
LLU0032	German (2)	3	0	2	0	2	3	5		C		Complementary

FACULTATIVE COURSES

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Year I, Semester 1												
PLR0101	Psychology	5	2	2	0	4	5	9		C		Complementary
Year I, Semester 2												
PLR0102	Pedagogy I	5	2	2	0	4	5	9		C		Complementary
Year II, Semester 3												
LLU0#3	Foreign Language 3 (diferrent from that in Year I, Sem.1)	3	0	2	0	2	3	5		C		Complementary
PLR0302	Pedagogy II	5	2	2	0	4	5	9		C		Complementary
Year II, Semester 4												
LLU00#4	Foreign Language 4 (diferrent from that in Year I, Sem.2)	3	0	2	0	2	3	5		C		Complementary
PLR0402	Didactics of Speciality	5	2	2	0	4	5	9		C		Complementary
Year III, Semester 5												
PLR0501	Pedagogical Traineeship 1	3	0	0	3	3	2	5		C		Complementary
PLR0502	IAC	2	1	1	0	2	2	4		C		Complementary
Year III, Semester 6												
PLR0601	Pedagogical Traineeship 2	2	0	0	3	3	1	4		C		Complementary
PLR0602	Class management	3	1	1	0	2	4	6		C		Complementary
Credits / Hours / Week / Assesment / % from total number of courses		21	4	8	6	18	19	37	0	6	0	11.32%
Hours / week - Hours for study / week			56	112	78	246	264	510				
			246			510						

Appendis to the Curriculum for Programme of Study: MEDICAL PHYSICS

FUNDAMENTAL COURSES (Fundamental)

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Semestrele 1 - 5 (14 weeks)												
FLR3103	Mecanics and Acoustics	6	2	1	1	4	7	11	E			Fundamental
FLR1201	Heat	8	3	2	2	7	7	14	E			Fundamental
FLR1202	Differential Equations of Theoretical Physics	6	2	2	0	4	7	11	E			Fundamental
FLR3203	Electricity and Magnetism	6	2	1	1	4	7	11	E			Fundamental
FLR3301	Optics	5	2	1	1	4	5	9	E			Fundamental
FLR3302	Electronics	5	2	1	1	4	5	9	E			Fundamental
FLR1401	Atomic physics	5	2	1	1	4	5	9	E			Fundamental
FLR1403	Nuclear physics	5	2	1	1	4	5	9	E			Fundamental
FLR3404	Quantum mechanics	5	2	2	0	4	5	9	E			Fundamental
FLR1501	Physics of Molecule	5	2	1	1	4	5	9	E			Fundamental
FLR1502	Statistical Physics	5	2	2	0	4	5	9	E			Fundamental
FLR3503	Solid State Physcis	5	2	1	1	4	5	9	E			Fundamental
TOTAL		66	25	16	10	51	68	119	12	0	0	
Semester 6 (12 weeks)												
FLR1601	Physics of Semiconductors	5	2	1	1	4	6	10	E			Fundamental
TOTAL		5	2	1	1	4	6	10	1	0	0	
Credits / Hours / Week / Assesment / % from total number of courses		71	27	17	11	55	74	129	13	0	0	26.42%
Hours / week - Hours for study / week			374	236	152	762	1024	1786				
			762			1786						

SPECIALITY COURSES (Speciality)

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Semestrele 1 - 5 (14 weeks)												
FLX3105	Optional course 1	5	2	0	2	4	5	9		C		Speciality
FLR3107	Human Anatomy and Physiology	2	2	1	0	3	1	4		C		Speciality
FLX3204	Optional course 2	5	2	1	0	3	6	9		C		Speciality
FLR3206	Biomechanics	2	2	1	0	3	1	4	E			Speciality
FLR1303	Fundamentals of Theoretical Physics	5	2	2	0	4	5	9	E			Speciality
FLR1304	Applied Informatics in Physics	3	2	0	2	4	1	5	E			Speciality
FLR3306	Biophysics and Biochemisty	5	2	1	0	3	6	9	E			Speciality
FLX3305	Optional course 3	5	2	1	1	4	5	9		C		Speciality
FLR3307	Bioelectromagnetism	2	2	1	0	3	1	4	E			Speciality
FLR3402	Optometrie și microscopie Optics	5	2	1	1	4	5	9	E			Speciality
FLR3405	Fundamentals of Molecular Spectroscopy	3	2	0	1	3	2	5		C		Speciality
FLR3406	Traineeship	2	0	0	4	4	0	4		C		Speciality
FLX3407	Optional course 4	5	2	1	0	3	6	9		C		Speciality
FLR3506	Medical Apparatus	5	2	1	1	4	5	9	E			Speciality
FLR3507	Nuclear Medicine	5	2	1	1	4	5	9	E			Speciality
FLX3508	Optional course 5	5	2	1	1	4	5	9		C		Speciality
TOTAL		64	30	13	14	57	59	116	8	8	0	
Semester 6 (12 weeks)												
FLR3602	Numerical and Analogical Modelling of Biological Processes	5	2	1	1	4	6	10	E			Speciality
FLR3605	Radiology and Medical Imaging	5	2	1	1	4	6	10	E			Speciality
FLR3606	Detectors, Dosimetry and Radioprotection	5	2	1	1	4	6	10	E			Speciality
FLX3604	Optional course 6	5	2	1	1	4	6	10		C		Speciality
FLR3607	Bachelor Thesis writing	3	0	0	2	2	4	6			VP	Speciality
TOTAL		23	8	4	6	18	28	46	3	1	1	
Credits / Hours / Week / Assesment / % from total number of courses		87	38	17	20	75	87	162	11	9	1	37.74%
Hours / week - Hours for study / week			516	230	268	1014	1162	2176				
			1014			2176						

COMPLEMENTARY COURSES (Complementary)

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Semestrelle 1 - 5 (14 weeks)												
MLR1101	Algebra	5	2	2	0	4	5	9	E			Complementary
MLR1102	Mathematical Analysis	5	2	2	0	4	5	9	E			Complementary
CLR1104	Chemistry	4	2	0	1	3	4	7	E			Complementary
FLX1106	Foreign Language 1	3	0	2	0	2	3	5		C		Complementary
YLU0011	Sports 1	0	0	2	0	2	0	2			VP	Complementary
FLX1205	Foreign Language 2	3	0	2	0	2	3	5		C		Complementary
YLU0012	Sports 2	0	0	2	0	2	0	2			VP	Complementary
TOTAL		20	6	12	1	19	20	39	3	2	2	
Semester 6 (12 weeks)												
												Complementary
TOTAL		0	0	0	0	0	0	0	0	0	0	
Credits / Hours / Week / Assesment / % from total number of courses		20	6	12	1	19	20	39	3	2	2	13.21%
Hours / week - Hours for study / week			84	168	14	266	280	546				
			266			546						

FACULTATIVE COURSES												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Semestrel 1 - 5 (14 weeks)												
PLR0101	Psychology	5	2	2	0	4	5	9		C		Complementary
PLR0102	Pedagogy I	5	2	2	0	4	5	9		C		Complementary
LLU00#3	Foreign Language 3 (diferrent from that in Year I, Sem.1)	3	0	2	0	2	3	5		C		Complementary
PLR0302	Pedagogy II	5	2	2	0	4	5	9		C		Complementary
LLU00#4	Foreign Language 4 (diferrent from that in Year I, Sem.2)	3	0	2	0	2	3	5		C		Complementary
PLR0402	Didactics of Speciality	5	2	2	0	4	5	9		C		Complementary
PLR0501	Pedagogical Traineeship 1	3	0	0	3	3	2	5		C		Complementary
PLR0502	IAC	2	1	1	0	2	2	4		C		Complementary
TOTAL		31	9	13	3	25	30	55	0	8	0	
Semester 6 (12 weeks)												
PLR0601	Pedagogical Traineeship 2	2	0	0	3	3	1	4		C		Complementary
PLR0602	Class management	3	1	1	0	2	3	5		C		Complementary
TOTAL		5	1	1	3	5	4	9	0	2	0	
Credits / Hours / Week / Assesment / % from total number of courses		36	10	14	6	30	34	64	0	10	0	11.32%
Hours / week - Hours for study / week			138	194	78	410	468	878				
			410			878						

OVERALL BALANCE

CODE	COURSES	HOURS	Hours for study / week			%	NUMBER OF CREDITS		
			F	I	T		YEAR I	YEAR II	YEAR III
1	COMPULSORY	130	130	149	279	86%	50	50	50
2	OPTIONAL	21	21	34	55	14%	10	10	10
TOTAL		151	151	183	334	100%	60	60	60

CURRICULUM starting from Academic year 2015-2016**BABEȘ-BOLYAI UNIVERSITY****FACULTY OF PHYSICS**

Field of study: PHYSICS

Programme of study: PHYSICS

Language of instruction: HUNGARIAN

Name of qualification: BACHELOR IN PHYSICS

Duration of study: 6 SEMESTERS

Type of study: FULL TIME

I. DEGREE STRUCTURE

180 credits, whereof:

150 credits for compulsory courses

including 6 credits for a foreign language (2 semesters),

no credits for passing the test for subject Sports

30 credits for optional course

and

20 credits for Bachelor exam

II. STRUCTURE OF PROGRAMME (in weeks)

	Courses given		Examination period			Traineeship	Holiday		
	Sem I	Sem II	Winter	Spring	Summer		Winter	Spring	Summer
Year I	14	14	3	3	2	0	3	1	12
Year II	14	14	3	3	2	2	3	1	10
Year III	14	12	3	2	2	2	3	1	13

REMARKS

Traineeship in Semester 4 is organized after Summer examination period

In Semester 6 Traineeship is organized during Semester

The examination period at the end of the Semester 6 is followed by 2 weeks consecrated to preparing Bachelor exams.

III. WEEKLY STRUCTURE OF THE PROGRAMME (in hours)

	Semester I	Semester II
Year I	26	25
Year II	26	25
Year III	25	24

IV. BACHELOR EXAM - between 25 June - 6 July

Part 1: Basic and speciality knowledge exam = 10 credits

Part 2: Bachelor thesis = 10 credits

V. SELECTION OF OPTIONAL COURSES:

Sem. 1: choosing 1 course from package: FLX1105

Sem. 2: choosing 1 course from package: FLX1204

Sem. 3: choosing 1 course from package: FLX1305

Sem. 4: choosing 1 course from package: FLX1407

Sem. 5: choosing 1 course from package: FLX1506

Sem. 6: choosing 1 course from package: FLX1606

For a maximum of 3 optional courses, it is allowed for every student to select any course held at any other Faculty of the Babeș-Bolyai University.

In order to fill a teaching position the graduate must obtain a Certificate issued by the Department of Teacher Training

VI. SIMILAR PROGRAMMES:

Universite d'Orleans, France

Universite Joseph Fourier Grenoble, France

Eötvös Loránd University, Hungary

University of Debrecen, Hungary

Universidad de Zaragoza, Spain

University of Oxford, UK

University of Cambridge, UK

RECTOR,

Acad.Prof.univ.dr. Ioan Aurel POP

DEAN,

Prof.univ.dr. Aurel POP

VII. COURSES

YEAR I / SEMESTER 1												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
MLM1101	Algebra	5	2	2	0	4	5	9	E			Complementary
MLM1102	Mathematical Analysis	5	2	2	0	4	5	9	E			Complementary
FLM1103	Mecanics and Acoustics	8	3	2	2	7	7	14	E			Fundamental
CLM1104	Chemistry	4	2	0	1	3	4	7	E			Complementary
FLX1105	Optional course 1	5	2	0	2	4	5	9		C		Speciality
LLX1106	Foreign Language 1 (X = E / English; F / French; G / Germană; etc.)	3	0	2	0	2	3	5		C		Complementary
YLX1107	Sports 1	0	0	2	0	2	0	2			VP	Complementary
TOTAL		30	11	10	5	26	29	55	4	2	1	

YEAR I / SEMESTER 2												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLM1201	Heat	8	3	2	2	7	7	14	E			Fundamental
FLM1202	Differential Equations of Theoretical Physics	6	2	2	0	4	7	11	E			Speciality
FLM1203	Electricity and Magnetism	8	3	2	2	7	7	14	E			Fundamental
FLX1204	Optional course 2	5	2	1	0	3	6	9		C		Complementary
LLX1205	Foreign Language 2 (X = E / English; F / French; G / Germană; etc.)	3	0	2	0	2	3	5		C		Complementary
YLX1206	Sports 2	0	0	2	0	2	0	2			VP	Complementary
TOTAL		30	10	11	4	25	30	55	3	2	1	

YEAR II / SEMESTER 3												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLM1301	Optics	8	3	2	2	7	7	14	E			Fundamental
FLM1302	Electronics	8	3	2	2	7	7	14	E			Fundamental
FLM1303	Fundamentals of Theoretical Physics	6	3	2	0	5	6	11	E			Fundamental
FLM1304	Applied Informatics in Physics	3	2	0	2	4	1	5	E			Fundamental
FLX1305	Optional course 3	5	2	1	0	3	6	9		C		Speciality
TOTAL		30	13	7	6	26	27	53	4	1	0	

YEAR II / SEMESTER 4												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLM1401	Atomic physics	6	2	1	1	4	7	11	E			Fundamental
FLM1402	Electrodynamics	6	2	2	0	4	7	11	E			Fundamental
FLM1403	Physics of Molecule	5	2	1	1	4	5	9	E			Fundamental
FLM1404	Quantum mechanics	6	3	2	0	5	6	11	E			Fundamental
FLM1406	Traineeship	2	0	0	4	4	0	4		C		Speciality
FLX1407	Optional course 4	5	2	1	1	4	5	9		C		Fundamental
TOTAL		30	11	7	7	25	30	55	4	2	0	

YEAR III / SEMESTER 5												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLM1501	Nuclear physics	5	2	1	1	4	5	9	E			Fundamental
FLM1502	Statistical Physics	5	2	2	0	4	5	9	E			Fundamental
FLM1503	Solid State Physcis	5	2	2	1	5	4	9	E			Fundamental
FLM1504	Spectroscopy and Lasers	5	2	1	1	4	5	9	E			Fundamental
FLM1505	Plasma Physics and Applications	5	2	1	1	4	5	9	E			Fundamental
FLX1506	Optional course 5	5	2	1	1	4	5	9		C		Speciality
TOTAL		30	12	8	5	25	29	54	5	1	0	

YEAR III / SEMESTER 6												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLM1601	Physics of Semiconductors	5	2	1	1	4	6	10	E			Fundamental
FLM1602	Numerical and Simulation Methods in Physics	5	2	0	2	4	6	10	E			Fundamental
FLM1603	Subatomic Particles	5	2	1	1	4	6	10	E			Speciality
FLM1604	Astrofizică și cosmologie	5	2	1	1	4	6	10	E			Speciality
FLM1605	Traineeship in the Area of Study	2	0	0	2	2	2	4		C		Speciality
FLX1606	Optional course 6	5	2	1	1	4	6	10		C		Speciality
FLM1607	Bachelor Thesis writing	3	0	0	2	2	4	6			VP	Speciality
TOTAL		30	10	4	10	24	36	60	4	2	1	

COURSES OPTIONAL

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
OPTIONAL COURSE 1 (Year I, Semester 1) package FLX1105												
FLM0102	Computer Aided Physics	5	2	0	2	4	5	9		C		Speciality
FLM5105	Computer Aided Design. Technical Drawing	5	2	0	2	4	5	9		C		Speciality
XLX0101	Optional cours held at an other Faculty	5	2	0	2	4	5	9		C		Speciality
OPTIONAL COURSE 1 (Year I, Semester 2) package FLX1204												
XLX0201	Optional cours held at an other Faculty	5	2	1	0	3	6	9		C		Complementary
FLM0201	Physics and the Evolution of Knowledge	5	2	1	0	3	6	9		C		Complementary
FLM5206	Oscillations and Waves	5	2	1	0	3	6	9		C		Complementary
OPTIONAL COURSE 3 (Year II, Semester 3) package FLX1305												
FLM0301	Interdisciplinary Applications of Physics	5	2	0	1	3	6	9		C		Speciality
XLX0301	Optional cours held at an other Faculty	5	2	1	0	3	6	9		C		Speciality
OPTIONAL COURSE 4 (Year II, Semester 4) package FLX1407												
FLM0401	Physics of Fluids	5	2	1	1	4	5	9		C		Fundamental
FLM5405	Electrotechnics	5	2	0	2	4	5	9		C		Fundamental
FLM5603	Systems and Instrumentation with Sensors	5	2	1	1	4	5	9		C		Fundamental
OPTIONAL COURSE 5 (Year III, Semester 5) package FLX1506												
FLM1504	Virtual Instrumentation	5	2	1	1	4	5	9		C		Speciality
FLM0501	Dynamic Systems	5	2	1	1	4	5	9		C		Speciality
OPTIONAL COURSE 6 (Year III, Semester 6) package FLX1606												
FLM5403	Microprocessors. Computers	5	2	1	0	3	7	10		C		Speciality
FLM5604	Physics and Technology of Magnetic Materials	5	2	1	0	3	7	10		C		Speciality
Credits / Hours / Week / Assesment / % from total number of courses		30	12	4	5	21	34	55	0	6	0	12,24%
Hours / week - Hours for study / week			164	54	70	288	462	750				
			288			750						

OPTIONS FOR FOREIGN LANGUAGE 1 & 2

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Foreign Language 1 (Year I, Semester 1)												
LLU0011	English (1)	3	0	2	0	2	3	5		C		Complementary
LLU0021	French (1)	3	0	2	0	2	3	5		C		Complementary
LLU0031	German (1)	3	0	2	0	2	3	5		C		Complementary
Foreign Language 2 (Year I, Semester 2)												
LLU0012	English (2)	3	0	2	0	2	3	5		C		Complementary
LLU0022	French (2)	3	0	2	0	2	3	5		C		Complementary
LLU0032	German (2)	3	0	2	0	2	3	5		C		Complementary

FACULTATIVE COURSES

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Year I, Semester 1												
PLM0101	Psychology	5	2	2	0	4	5	9		C		Complementary
Year I, Semester 2												
PLM0102	Pedagogy I	5	2	2	0	4	5	9		C		Complementary
Year II, Semester 3												
LLU0#3	Foreign Language 3 (diferrent from that in Year I, Sem.1)	3	0	2	0	2	3	5		C		Complementary
PLM0302	Pedagogy II	5	2	2	0	4	5	9		C		Complementary
Year II, Semester 4												
LLU00#4	Foreign Language 4 (diferrent from that in Year I, Sem.2)	3	0	2	0	2	3	5		C		Complementary
PLM0402	Didactics of Speciality	5	2	2	0	4	5	9		C		Complementary
Year III, Semester 5												
PLM0501	Pedagogical Traineeship 1	3	0	0	3	3	2	5		C		Complementary
PLM0502	IAC	2	1	1	0	2	2	4		C		Complementary
Year III, Semester 6												
PLM0601	Pedagogical Traineeship 2	2	0	0	3	3	1	4		C		Complementary
PLM0602	Class management	3	1	1	0	2	4	6		C		Complementary
Credits / Hours / Week / Assesment / % from total number of courses		21	4	8	6	18	19	37	0	6	0	14.29%
Hours / week - Hours for study / week			56	112	78	246	264	510				
			246			510						

Appendis to the Curriculum for Programme of Study: PHYSICS

FUNDAMENTAL COURSES (Fundamental)

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Semestrele 1 - 5 (14 weeks)												
FLM1103	Mecanics and Acoustics	8	3	2	2	7	7	14	E			Fundamental
FLM1201	Heat	8	3	2	2	7	7	14	E			Fundamental
FLM1203	Electricity and Magnetism	8	3	2	2	7	7	14	E			Fundamental
FLM1301	Optics	8	3	2	2	7	7	14	E			Fundamental
FLM1302	Electronics	8	3	2	2	7	7	14	E			Fundamental
FLM1303	Fundamentals of Theoretical Physics	6	3	2	0	5	6	11	E			Fundamental
FLM1304	Applied Informatics in Physics	3	2	0	2	4	1	5	E			Fundamental
FLM1401	Atomic physics	6	2	1	1	4	7	11	E			Fundamental
FLM1401	Atomic physics	6	2	1	1	4	7	11	E			Fundamental
FLM1501	Nuclear physics	5	2	1	1	4	5	9	E			Fundamental
FLM1404	Quantum mechanics	6	3	2	0	5	6	11	E			Fundamental
FLM1403	Physics of Molecule	5	2	1	1	4	5	9	E			Fundamental
FLM1502	Statistical Physics	5	2	2	0	4	5	9	E			Fundamental
FLM1503	Solid State Physcis	5	2	2	1	5	4	9	E			Fundamental
FLM1504	Spectroscopy and Lasers	5	2	1	1	4	5	9	E			Fundamental
FLM1505	Plasma Physics and Applications	5	2	1	1	4	5	9	E			Fundamental
TOTAL		97	39	24	19	82	91	173	16	0	0	
Semester 6 (12 weeks)												
FLM1601	Physics of Semiconductors	5	2	1	1	4	6	10	E			Fundamental
FLM1602	Numerical and Simulation Methods in Physics	5	2	0	2	4	6	10	E			Fundamental
TOTAL		10	4	1	3	8	12	20	2	0	0	
Credits / Hours / Week / Assesment / % from total number of courses		107	43	25	22	90	103	193	18	0	0	36,73%
Hours / week - Hours for study / week			594	348	302	1244	1418	2662				
			1244			2662						

SPECIALITY COURSES (Speciality)												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Semestrele 1 - 5 (14 weeks)												
FLX1105	Optional course 1	5	2	0	2	4	5	9		C		Speciality
FLM1202	Differential Equations of Theoretical Physics	6	2	2	0	4	7	11	E			Speciality
FLX1305	Optional course 3	5	2	1	0	3	6	9		C		Speciality
FLM1406	Traineeship	2	0	0	4	4	0	4		C		Speciality
FLX1407	Optional course 4	5	2	1	1	4	5	9		C		Speciality
FLX1506	Optional course 5	5	2	1	1	4	5	9		C		Speciality
TOTAL		28	10	5	8	23	28	51	1	5	0	
Semester 6 (12 weeks)												
FLM1603	Subatomic Particles	5	2	1	1	4	6	10	E			Speciality
FLM5604	Physics and Technology of Magnetic Materials	5	2	1	0	3	7	10		C		Speciality
FLM1605	Traineeship in the Area of Study	2	0	0	2	2	2	4		C		Speciality
FLX1606	Optional course 6	5	2	1	1	4	6	10		C		Speciality
FLM1607	Bachelor Thesis writing	3	0	0	2	2	4	6			VP	Speciality
TOTAL		20	6	3	6	15	25	40	1	3	1	
Credits / Hours / Week / Assesment / % from total number of courses		48	16	8	14	38	53	91	2	8	1	24,49%
Hours / week - Hours for study / week			212	106	184	502	692	1194				
			502			1194						

COMPLEMENTARY COURSES (Complementary)

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Semestrele 1 - 5 (14 weeks)												
MLM1101	Algebra	5	2	2	0	4	5	9	E			Complementary
MLM1102	Mathematical Analysis	5	2	2	0	4	5	9	E			Complementary
CLM1104	Chemistry	4	2	0	1	3	4	7	E			Complementary
LLX1106	Foreign Language 1 (X = E / English; F / French; G / Germană; etc.)	3	0	2	0	2	3	5		C		Complementary
YLX1107	Sports 1	0	0	2	0	2	0	2			VP	Complementary
FLX1204	Optional course 2	5	2	1	0	3	6	9		C		Complementary
LLX1205	Foreign Language 2 (X = E / English; F / French; G / Germană; etc.)	3	0	2	0	2	3	5		C		Complementary
YLX1206	Sports 2	0	0	2	0	2	0	2			VP	Complementary
TOTAL		25	8	13	1	22	26	48	3	3	2	
Semester 6 (12 weeks)												
												Complementary
TOTAL		0	0	0	0	0	0	0	0	0	0	
Credits / Hours / Week / Assesment / % from total number of courses		25	8	13	1	22	26	48	3	3	2	14,29%
Hours / week - Hours for study / week			112	182	14	308	364	672				
			308			672						

FACULTATIVE COURSES												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Semestrel 1 - 5 (14 weeks)												
PLM0101	Psychology	5	2	2	0	4	5	9		C		Complementary
PLM0102	Pedagogy I	5	2	2	0	4	5	9		C		Complementary
LLU00#3	Foreign Language 3 (diferrent from that in Year I, Sem.1)	3	0	2	0	2	3	5		C		Complementary
PLM0302	Pedagogy II	5	2	2	0	4	5	9		C		Complementary
LLU00#4	Foreign Language 4 (diferrent from that in Year I, Sem.2)	3	0	2	0	2	3	5		C		Complementary
PLM0402	Didactics of Speciality	5	2	2	0	4	5	9		C		Complementary
PLM0501	Pedagogical Traineeship 1	3	0	0	3	3	2	5		C		Complementary
PLM0502	IAC	2	1	1	0	2	2	4		C		Complementary
TOTAL		31	9	13	3	25	30	55	0	8	0	
Semester 6 (12 weeks)												
PLM0601	Pedagogical Traineeship 2	2	0	0	3	3	1	4		C		Complementary
PLM0602	Class management	3	1	1	0	2	4	6		C		Complementary
TOTAL		5	1	1	3	5	5	10	0	2	0	
Credits / Hours / Week / Assesment / % from total number of courses		36	10	14	6	30	35	65	0	10	0	12.24%
Hours / week - Hours for study / week			138	194	78	410	480	890				
			410			890						

OVERALL BALANCE

CODE	COURSES	HOURS	Hours for study / week			%	NUMBER OF CREDITS		
			F	I	T		YEAR I	YEAR II	YEAR III
1	COMPULSORY	130	130	147	277	86%	50	50	50
2	OPTIONAL	21	21	34	55	14%	10	10	10
TOTAL		151	151	181	332	100%	60	60	60

CURRICULUM starting from Academic year 2015-2016**BABEȘ-BOLYAI UNIVERSITY****FACULTY OF PHYSICS**

Field of study: PHYSICS

Programme of study: PHYSICS WITH COMPUTER SCIENCE

Language of instruction: HUNGARIAN

Name of qualification: BACHELOR IN PHYSICS

Duration of study: 6 SEMESTERS

Type of study: FULL TIME

I. DEGREE STRUCTURE

180 credits, whereof:

150 credits for compulsory courses

including 6 credits for a foreign language (2 semesters),

no credits for passing the test for subject Sports

30 credits for optional course

and

20 credits for Bachelor exam

	Courses given		Examination period			Traineeship	Holiday		
	Sem I	Sem II	Winter	Spring	Summer		Winter	Spring	Summer
Year I	14	14	3	3	2	0	3	1	12
Year II	14	14	3	3	2	2	3	1	10
Year III	14	12	3	2	2	2	3	1	13

REMARKS

Traineeship in Semester 4 is organized after Summer examination period

In Semester 6 Traineeship is organized during Semester

The examination period at the end of the Semester 6 is followed by 2 weeks consecrated to preparing Bachelor exams.

III. WEEKLY STRUCTURE OF THE PROGRAMME (in hours)

	Semester I	Semester II
Year I	26	25
Year II	26	25
Year III	24	25

IV. BACHELOR EXAM - between 25 June - 6 July

Part 1: Basic and speciality knowledge exam = 10 credits

Part 2: Bachelor thesis = 10 credits

V. SELECTION OF OPTIONAL COURSES:

Sem. 1: choosing 1 course from package: FLX2105

Sem. 2: choosing 1 course from package: FLX2204

Sem. 3: choosing 1 course from package: FLX2305

Sem. 4: choosing 1 course from package: FLX2406

Sem. 5: choosing 1 course from package: FLX2506

Sem. 6: choosing 1 course from package: FLX2604

For a maximum of 3 optional courses, it is allowed for every student to select any course held at any other Faculty of the Babeș-Bolyai University.

In order to fill a teaching position the graduate must obtain a Certificate issued by the Department of Teacher Training

VI. SIMILAR PROGRAMMES:

Universite d'Orleans, France

Universite Joseph Fourier Grenoble, France

Eötvös Loránd University, Hungary

University of Debrecen, Hungary

Universidad de Zaragoza, Spain

University of Oxford, UK

University of Cambridge, UK

VII. COURSES

YEAR I / SEMESTER 1												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
MLM1101	Algebra	5	2	2	0	4	5	9	E			Complementary
MLM1102	Mathematical Analysis	5	2	2	0	4	5	9	E			Complementary
FLM1103	Mecanics and Acoustics	8	3	2	2	7	7	14	E			Fundamental
CLM1104	Chemistry	4	2	0	1	3	4	7	E			Complementary
FLX1105	Optional course 1	5	2	0	2	4	5	9		C		Fundamental
LLX1106	Foreign Language 1 (X = E / English; F / French; G / Germană; etc.)	3	0	2	0	2	3	5		C		Complementary
YLX1107	Sports 1	0	0	2	0	2	0	2			VP	Complementary
TOTAL		30	11	10	5	26	29	55	4	2	1	

YEAR I / SEMESTER 2												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLM1201	Heat	8	3	2	2	7	7	14	E			Fundamental
FLM1202	Differential Equations of Theoretical Physics	6	2	2	0	4	7	11	E			Fundamental
FLM1203	Electricity and Magnetism	8	3	2	2	7	7	14	E			Fundamental
FLX1204	Optional course 2	5	2	1	0	3	6	9		C		Complementary
LLX1205	Foreign Language 2 (X = E / English; F / French; G / Germană; etc.)	3	0	2	0	2	3	5		C		Complementary
YLX1206	Sports 2	0	0	2	0	2	0	2			VP	Complementary
TOTAL		30	10	11	4	25	30	55	3	2	1	

YEAR II / SEMESTER 3												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLM1301	Optics	8	3	2	2	7	7	14	E			Fundamental
FLM1302	Electronics	8	3	2	2	7	7	14	E			Fundamental
FLM1303	Fundamentals of Theoretical Physics	6	3	2	0	5	6	11	E			Fundamental
FLM1304	Applied Informatics in Physics	4	2	0	2	4	3	7	E			Fundamental
FLX1305	Optional course 3	4	2	1	0	3	4	7		C		Speciality
TOTAL		30	13	7	6	26	27	53	4	1	0	

YEAR II / SEMESTER 4												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLM1401	Atomic physics	6	2	1	1	4	7	11	E			Fundamental
FLM1402	Electrodynamics	6	2	2	0	4	7	11	E			Fundamental
FLM1403	Physics of Molecule	6	2	1	1	4	7	11	E			Fundamental
FLM1404	Quantum mechanics	6	3	2	0	5	6	11	E			Fundamental
FLM1406	Traineeship	2	0	0	4	4	0	4		C		Speciality
FLX1407	Optional course 4	4	2	1	1	4	3	7		C		Fundamental
TOTAL		30	11	7	7	25	30	55	4	2	0	

YEAR III / SEMESTER 5												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLM1501	Nuclear physics	5	2	1	1	4	5	9	E			Fundamental
FLM1502	Statistical Physics	5	2	2	0	4	5	9	E			Fundamental
FLM1503	Solid State Physcis	5	2	2	1	5	4	9	E			Fundamental
FLM1504	Virtual Instrumentation	5	2	0	1	3	6	9	E			Fundamental
MLM5027	Databases	5	2	1	1	4	5	9	E			Speciality
FLX1506	Optional course 5	5	2	1	1	4	5	9		C		Speciality
TOTAL		30	12	7	5	24	30	54	5	1	0	

YEAR III / SEMESTER 6												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLM1601	Physics of Semiconductors	5	2	1	1	4	6	10	E			Fundamental
FLM1602	Numerical and Simulation Methods in Physics	5	2	0	2	4	6	10	E			Fundamental
MLM5002	Computers Networks and Administration	5	2	1	2	5	5	10	E			Speciality
MLM5007	Operating Systems	5	2	1	1	4	6	10	E			Speciality
FLM1605	Traineeship in the Area of Study	2	0	0	2	2	2	4		C		Speciality
FLX1606	Optional course 6	5	2	1	1	4	6	10		C		Speciality
FLM1607	Bachelor Thesis writing	3	0	0	2	2	4	6			VP	Speciality
TOTAL		30	10	4	11	25	35	60	4	2	1	

COURSES OPTIONAL												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
OPTIONAL COURSE 1 (Year I, Semester 1) package FLX1105												
FLM0102	Computer Aided Physics	5	2	0	2	4	5	9		C		Fundamental
FLM5105	Computer Aided Design. Technical Drawing	5	2	0	2	4	5	9		C		Fundamental
MLM7006	Informatica de baza	5	2	0	2	4	5	9		C		Fundamental
OPTIONAL COURSE 1 (Year I, Semester 2) package FLX1204												
FLM5206	Oscillations and Waves	5	2	1	0	3	6	9		C		Speciality
FLM0201	Physics and the Evolution of Knowledge	5	2	1	0	3	6	9		C		Speciality
MLM5022	Data structure and Algorithms	5	2	1	0	3	6	9		C		Speciality
OPTIONAL COURSE 3 (Year II, Semester 3) package FLX1305												
FLM0301	Interdisciplinary Applications of Physics	5	2	0	1	3	6	9		C		Speciality
XLX0301	Optional cours held at an other Faculty	5	2	1	0	3	6	9		C		Speciality
OPTIONAL COURSE 4 (Year II, Semester 4) package FLX1407												
FLM0401	Physics of Fluids	5	2	1	1	4	5	9		C		Fundamental
FLM5405	Electrotechnics	5	2	0	2	4	5	9		C		Fundamental
FLM5603	Systems and Instrumentation with Sensors	5	2	1	1	4	5	9		C		Fundamental
OPTIONAL COURSE 5 (Year III, Semester 5) package FLX1506												
FLM0501	Dynamic Systems	5	2	1	1	4	5	9		C		Speciality
FLM1504	Spectroscopy and Lasers	5	2	1	1	4	5	9		C		Speciality
FLM1505	Plasma Physics and Applications	5	2	1	1	4	5	9		C		Speciality
MLM5008	Metode avansate de programare	5	2	1	1	4	5	9		C		Speciality
OPTIONAL COURSE 6 (Year III, Semester 6) package FLX1606												
FLM1604	Astrophysics and Cosmology	5	2	1	0	3	7	10		C		Speciality
FLM5604	Physics and Technology of Magnetic Materials	5	2	1	0	3	7	10		C		Speciality
FLM5403	Microprocessors. Computers	5	2	1	0	3	7	10		C		Speciality
Credits / Hours / Week / Assesment / % from total number of courses		30	12	4	5	21	34	55	0	6	0	12,24%
Hours / week - Hours for study / week			164	54	70	288	462	750				
			288			750						

OPTIONS FOR FOREIGN LANGUAGE 1 & 2

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Foreign Language 1 (Year I, Semester 1)												
LLU0011	English (1)	3	0	2	0	2	3	5		C		Complementary
LLU0021	French (1)	3	0	2	0	2	3	5		C		Complementary
LLU0031	German (1)	3	0	2	0	2	3	5		C		Complementary
Foreign Language 2 (Year I, Semester 2)												
LLU0012	English (2)	3	0	2	0	2	3	5		C		Complementary
LLU0022	French (2)	3	0	2	0	2	3	5		C		Complementary
LLU0032	German (2)	3	0	2	0	2	3	5		C		Complementary

FACULTATIVE COURSES

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Year I, Semester 1												
PLM0101	Psychology	5	2	2	0	4	5	9		C		Complementary
Year I, Semester 2												
PLM0102	Pedagogy I	5	2	2	0	4	5	9		C		Complementary
Year II, Semester 3												
LLU0#3	Foreign Language 3 (diferrent from that in Year I, Sem.1)	3	0	2	0	2	3	5		C		Complementary
PLM0302	Pedagogy II	5	2	2	0	4	5	9		C		Complementary
Year II, Semester 4												
LLU00#4	Foreign Language 4 (diferrent from that in Year I, Sem.2)	3	0	2	0	2	3	5		C		Complementary
PLM0402	Didactics of Speciality	5	2	2	0	4	5	9		C		Complementary
Year III, Semester 5												
PLM0501	Pedagogical Traineeship 1	3	0	0	3	3	2	5		C		Complementary
PLM0502	IAC	2	1	1	0	2	2	4		C		Complementary
Year III, Semester 6												
PLM0601	Pedagogical Traineeship 2	2	0	0	3	3	1	4		C		Complementary
PLM0602	Class management	3	1	1	0	2	4	6		C		Complementary
Credits / Hours / Week / Assesment / % from total number of courses		21	4	8	6	18	19	37	0	6	0	12,24%
Hours / week - Hours for study / week			56	112	78	246	264	510				
			246			510						

Appendix to the Curriculum for Programme of Study: PHYSICS WITH COMPUTER SCIENCE

FUNDAMENTAL COURSES (Fundamental)

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Semestrele 1 - 5 (14 weeks)												
FLM1103	Mecanics and Acoustics	8	3	2	2	7	7	14	E			Fundamental
FLX1105	Optional course 1	5	2	0	2	4	5	9		C		Fundamental
FLM1201	Heat	8	3	2	2	7	7	14	E			Fundamental
FLM1202	Differential Equations of Theoretical Physics	6	2	2	0	4	7	11	E			Fundamental
FLM1203	Electricity and Magnetism	8	3	2	2	7	7	14	E			Fundamental
FLM1301	Optics	8	3	2	2	7	7	14	E			Fundamental
FLM1302	Electronics	8	3	2	2	7	7	14	E			Fundamental
FLM1303	Fundamentals of Theoretical Physics	6	3	2	0	5	6	11	E			Fundamental
FLM1304	Applied Informatics in Physics	4	2	0	2	4	3	7	E			Fundamental
FLM1401	Atomic physics	6	2	1	1	4	7	11	E			Fundamental
FLM1402	Electrodynamics	6	2	2	0	4	7	11	E			Fundamental
FLM1403	Physics of Molecule	6	2	1	1	4	7	11	E			Fundamental
FLM1404	Quantum mechanics	6	3	2	0	5	6	11	E			Fundamental
FLM1501	Nuclear physics	5	2	1	1	4	5	9	E			Fundamental
FLM1502	Statistical Physics	5	2	2	0	4	5	9	E			Fundamental
FLM1503	Solid State Physcis	5	2	2	1	5	4	9	E			Fundamental
FLM1504	Virtual Instrumentation	5	2	0	1	3	6	9	E			Fundamental
TOTAL		105	41	25	19	85	103	188	16	1	0	
Semester 6 (12 weeks)												
FLM1601	Physics of Semiconductors	5	2	1	1	4	6	10	E			Fundamental
FLM1602	Numerical and Simulation Methods in Physics	5	2	0	2	4	6	10	E			Fundamental
TOTAL		10	4	1	3	8	12	20	2	0	0	
Credits / Hours / Week / Assesment / % from total number of courses		115	45	26	22	93	115	208	18	1	0	38,78%
Hours / week - Hours for study / week			622	362	302	1286	1586	2872				
			1286			2872						

SPECIALITY COURSES (Speciality)												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Semestrele 1 - 5 (14 weeks)												
FLX1204	Optional course 2	5	2	1	0	3	6	9		C		Speciality
FLX1305	Optional course 3	4	2	1	0	3	4	7		C		Speciality
FLM1406	Traineeship	2	0	0	4	4	0	4		C		Speciality
FLX1407	Optional course 4	4	2	1	1	4	3	7		C		Speciality
MLM5027	Databases	5	2	1	1	4	5	9	E			Speciality
FLX1506	Optional course 5	5	2	1	1	4	5	9		C		Speciality
TOTAL		25	10	5	7	22	23	45	1	5	0	
Semester 6 (12 weeks)												
MLM5002	Computers Networks and Administartion	5	2	1	2	5	5	10	E			Speciality
MLM5007	Operating Systems	5	2	1	1	4	6	10	E			Speciality
FLM1605	Traineeship in the Area of Study	2	0	0	2	2	2	4		C		Speciality
FLX1606	Optional course 6	5	2	1	1	4	6	10		C		Speciality
FLM1607	Bachelor Thesis writing	3	0	0	2	2	4	6			VP	Speciality
TOTAL		20	6	3	8	17	23	40	2	2	1	
Credits / Hours / Week / Assesment / % from total number of courses		45	16	8	15	39	46	85	3	7	1	22,45%
Hours / week - Hours for study / week			212	106	194	512	598	1110				
			512			1110						

COMPLEMENTARY COURSES (Complementary)

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Semestrelle 1 - 5 (14 weeks)												
MLM1101	Algebra	5	2	2	0	4	5	9	E			Complementary
MLM1102	Mathematical Analysis	5	2	2	0	4	5	9	E			Complementary
CLM1104	Chemistry	4	2	0	1	3	4	7	E			Complementary
LLX1106	Foreign Language 1 (X = E / English; F / French; G / Germană; etc.)	3	0	2	0	2	3	5		C		Complementary
YLX1107	Sports 1	0	0	2	0	2	0	2			VP	Complementary
FLX1204	Optional course 2	5	2	1	0	3	6	9		C		Complementary
LLX1205	Foreign Language 2 (X = E / English; F / French; G / Germană; etc.)	3	0	2	0	2	3	5		C		Complementary
YLX1206	Sports 2	0	0	2	0	2	0	2			VP	Complementary
TOTAL		25	8	13	1	22	26	48	3	3	2	
Semester 6 (12 weeks)												
												Complementary
TOTAL		0	0	0	0	0	0	0	0	0	0	
Credits / Hours / Week / Assesment / % from total number of courses		25	8	13	1	22	26	48	3	3	2	14,29%
Hours / week - Hours for study / week			112	182	14	308	364	672				
			308			672						

FACULTATIVE COURSES													
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type	
			C	S	LP	F	I	T	E	C	VP		
Semestrele 1 - 5 (14 weeks)													
PLM0101	Psychology	5	2	2	0	4	5	9		C			Complementary
PLM0102	Pedagogy I	5	2	2	0	4	5	9		C			Complementary
LLU00#3	Foreign Language 3 (diferrent from that in Year I, Sem.1)	3	0	2	0	2	3	5		C			Complementary
PLM0302	Pedagogy II	5	2	2	0	4	5	9		C			Complementary
LLU00#4	Foreign Language 4 (diferrent from that in Year I, Sem.2)	3	0	2	0	2	3	5		C			Complementary
PLM0402	Didactics of Speciality	5	2	2	0	4	5	9		C			Complementary
PLM0501	Pedagogical Traineeship 1	3	0	0	3	3	2	5		C			Complementary
PLM0502	IAC	2	1	1	0	2	2	4		C			Complementary
TOTAL		31	9	13	3	25	30	55	0	8	0		
Semester 6 (12 weeks)													
PLM0601	Pedagogical Traineeship 2	2	0	0	3	3	1	4		C			Complementary
PLM0602	Class management	3	1	1	0	2	4	6		C			Complementary
TOTAL		5	1	1	3	5	5	10	0	2	0		
Credits / Hours / Week / Assesment / % from total number of courses		36	10	14	6	30	35	65	0	10	0		12.24%
Hours / week - Hours for study / week			138	194	78	410	480	890					
			410			890							

OVERALL BALANCE

CODE	COURSES	HOURS	Hours for study / week			%	NUMBER OF CREDITS		
			F	I	T		YEAR I	YEAR II	YEAR III
1	COMPULSORY	130	130	147	277	86%	50	50	50
2	OPTIONAL	21	21	34	55	14%	10	10	10
	TOTAL	151	151	181	332	100%	60	60	60

CURRICULUM starting from Academic year 2015-2016**BABEȘ-BOLYAI UNIVERSITY****FACULTY OF PHYSICS****APPLIED ENGINEERING**

Programme of study: ENGINEERING PHYSICS

Language of instruction: ROMANIAN

Name of qualification: ENGINEER

Duration of study: 8 SEMESTERS

Type of study: FULL TIME

I. DEGREE STRUCTURE

240 credits, whereof:

216 credits for compulsory courses

including 6 credits for a foreign language (2 semesters),

no credits for passing the test for subject Sports

24 credits for optional course

and

20 credits for Bachelor exam

II. STRUCTURE OF PROGRAMME (in weeks)

	Courses given		Examination period			Traineeship	Holiday		
	Sem I	Sem II	Winter	Spring	Summer		Winter	Spring	Summer
Year I	14	14	3	3	2	0	3	1	12
Year II	14	14	3	3	2	1	3	1	11
Year III	14	14	3	3	2	4	3	1	8
Year IV	14	14	3	2	2	4	3	1	13

REMARKS

Traineeship in Semester 4 is organized after Summer examination period

In Semester 6 Traineeship is organized during Semester

III. WEEKLY STRUCTURE OF THE PROGRAMME (in hours)

	Semester I	Semester II
Year I	28	28
Year II	28	26
Year III	28	26
Year IV	28	27

IV. BACHELOR EXAM - between 24 June - 6 July

Part 1: Basic and speciality knowledge exam = 10 credits

Part 2: Bachelor thesis = 10 credits

V. SELECTION OF OPTIONAL COURSES:

Sem. 1: choosing 1 course from package: NONE

Sem. 2: choosing 1 course from package: FLX5204

Sem. 3: choosing 1 course from package: FLX5304

Sem. 4: choosing 1 course from package: FLX5406

Sem. 5: choosing 1 course from package: FLX5506

Sem. 6: choosing 1 course from package: FLX5608

Sem. 7: choosing 1 course from package: FLX5708

Sem. 8: choosing 1 course from package: FLX5805

For a maximum of 3 optional courses, it is allowed for every student to select any course held at any other Faculty of the Babeș-Bolyai University.

In order to fill a teaching position the graduate must obtain a Certificate issued by the Department of Teacher Training

VI. SIMILAR PROGRAMMES:

Technische Universität Dresden, Germany

Université Joseph Fourier Grenoble, France

University of Cambridge, UK

Karlsruher Institut für Technologie, Germany

Universidad de Zaragoza, Spain

University of Oxford, UK

RECTOR,

Acad.Prof.univ.dr. Ioan Aurel POP

DEAN,

Prof.univ.dr. Aurel POP

VII. COURSES

YEAR I / SEMESTER 1													
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type	
			C	S	LP	F	I	T	E	C	VP		
MLR1101	Algebra	5	2	2	0	4	5	9	E			Fundamental	
MLR1102	Mathematical Analysis	5	2	2	0	4	5	9	E			Fundamental	
FLR1103	Mecanics and Acustics	8	3	2	2	7	7	14	E			Fundamental	
CLR1104	Chemistry	3	2	0	1	3	2	5	E			Fundamental	
FLR5105	Computer Aided Design. Technical Drawing	4	2	0	2	4	3	7	E			Fundamental	
FLX1106	Foreign Language I	3	0	2	0	2	3	5		C		Complementary	
FLR5107	Engineering Design I	2	1	0	1	2	2	4	E			Speciality	
YLU0011	Sports I	0	0	2	0	2	0	2			VP	Complementary	
TOTAL		30	12	10	6	28	27	55	6	1	1		

YEAR I / SEMESTER 2													
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type	
			C	S	LP	F	I	T	E	C	VP		
FLR1201	Heat	8	3	2	2	7	7	14	E			Field of Study	
FLR1202	Differential Equations of Theoretical Physics	5	2	2	0	4	5	9	E			Fundamental	
FLR1203	Electricity and Magnetism	8	3	2	2	7	7	14	E			Field of Study	
FLX5204	Optional course 2	3	2	1	0	3	2	5		C		Complementary	
FLX1205	Foreign Language II	3	0	2	0	2	3	5		C		Complementary	
FLR5206	Oscillation and Waves	3	2	1	0	3	2	5	E			Field of Study	
YLU0012	Sports II	0	0	2	0	2	0	2			VP	Complementary	
TOTAL		30	12	12	4	28	26	54	4	2	1		

YEAR II / SEMESTER 3													
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type	
			C	S	LP	F	I	T	E	C	VP		
FLR1301	Optics	8	3	2	2	7	7	14	E			Field of Study	
FLR1302	Electronics	8	3	2	2	7	7	14	E			Field of Study	
FLR1303	Fundamentals of Theoretical Physics	5	3	2	0	5	4	9	E			Fundamental	
FLX5304	Optional course 3	3	2	1	1	4	1	5		C		Fundamental	
FLR5305	Technology of Materials	3	1	0	1	2	3	5		C		Speciality	
FLR5306	Materials resistance	3	2	0	1	3	2	5		C		Speciality	
TOTAL		30	14	7	7	28	24	52	3	3	0		

YEAR II / SEMESTER 4													
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type	
			C	S	LP	F	I	T	E	C	VP		
FLR1401	Atomic physics	5	2	1	1	4	5	9	E			Field of Study	
FLR1402	Nuclear Physics	5	2	2	0	4	5	9	E			Field of Study	
FLR5403	Microprocessors. Computers	4	2	0	2	4	3	7	E			Field of Study	
FLR1404	Quantum Mecanics	5	3	2	0	5	4	9	E			Field of Study	
FLR5405	Electrotechnics	4	2	1	1	4	3	7	E			Speciality	
FLX5406	Optional course 4	4	2	0	1	3	4	7		C		Field of Study	
FLR5407	Traineeship	3	0	0	2	2	0	2		C		Field of Study	
TOTAL		30	13	6	7	26	24	50	5	2	0		

YEAR III / SEMESTER 5													
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type	
			C	S	LP	F	I	T	E	C	VP		
FLR1501	Physics of Molecule	5	2	1	1	4	5	9	E			Field of Study	
FLR5502	Engineering Design II	3	0	0	3	3	2	5		C		Speciality	
FLR1503	Solid State Physics	6	2	2	1	5	6	11	E			Field of Study	
FLR1504	Spectroscopy and Lasers	5	2	1	1	4	5	9	E			Field of Study	
FLR1505	Plasma Physics and Applications	5	2	1	1	4	5	9	E			Field of Study	
FLX5506	Optional course 5	3	2	1	1	4	1	5		C		Fundamental	
ILR0004	Management	3	2	2	0	4	1	5		C		Field of Study	
TOTAL		30	12	8	8	28	25	53	4	3	0		

YEAR III / SEMESTER 6													
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type	
			C	S	LP	F	I	T	E	C	VP		
FLR1601	Physics of Semiconductors	4	2	1	1	4	3	7	E			Speciality	
FLR5602	Technological Applications of Lasers. Biophotonics	4	2	1	1	4	3	7	E			Field of Study	
FLR5603	Systems and Instrumentation with Sensors	4	2	1	1	4	3	7	E			Speciality	
FLR5604	Introduction to Nanotechnology	4	2	0	1	3	4	7		C		Speciality	
FLR5605	Non-Polluting Energy Technologies	5	2	0	1	3	6	9	E			Field of Study	
FLR5606	Traineeship	3	0	0	8	8	0	8		C		Field of Study	
FLR5607	Microwaves	3	2	1	1	4	1	5		C		Field of Study	
FLX5608	Optional course 6	3	2	0	2	4	1	5		C		Field of Study	
TOTAL		30	14	4	8	26	21	47	4	4	0		

YEAR IV / SEMESTER 7												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLR5701	Physics and Technology of Oxidic Materials	5	2	1	1	4	5	9	E			Speciality
FLR5702	Physics and Technology of Polymers	5	2	1	1	4	5	9	E			Speciality
FLR5703	Cryogenic Tehcnologies	3	2	0	1	3	2	5	E			Speciality
FLR5704	Nuclear Spectroscopy	4	2	1	1	4	3	7	E			Speciality
FLR5705	Heterogene Materials. Technological Applications	3	2	0	1	3	2	5	E			Speciality
FLR5706	Optoelectronics	3	2	0	1	3	2	5	E			Field of Study
FLR5707	Modern methods and technics of microscopic analysis	4	2	1	1	4	3	7	E			Field of Study
FLX5708	Optional course 7	3	2	0	1	3	2	5		C		Complementary
TOTAL		30	16	4	8	28	24	52	7	1	0	

YEAR IV / SEMESTER 8												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLR5801	Biorobotics	6	2	1	1	4	7	11		C		Speciality
FLR5802	Physical Methods for Non-Destructive Measurements and Control	5	2	1	1	4	5	9	E			Field of Study
FLR5803	Physics and Technology of Superconductive Materials	6	2	0	2	4	7	11	E			Speciality
FLR1604	Physics and Technology of Magnetic Materials	5	2	1	1	4	5	9	E			Speciality
FLX5805	Optional course 8	5	2	1	1	4	5	9		C		Field of Study
FLR5806	Bachelor Thesis writing	3	0	0	8	7	1	8			VP	Field of Study
TOTAL		30	10	4	14	27	30	57	3	2	1	

COURSES OPTIONAL

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
OPTIONAL COURSE 1 (Year I, Semester 1) NONE												
		0	0	0	0	0	0	0				
OPTIONAL COURSE 2 (Year I, Semester 2) package FLX5402												
XLX0202	Optional course held at an other Faculty	3	2	1	0	3	2	5		C		Complementary
FLR1206	Physics and Evolution of Knowledge	3	2	1	0	3	2	5		C		Complementary
OPTIONAL COURSE 3 (Year II, Semester 3) package FLX5304												
FLR1304	Applied Informatics for Physics	3	2	0	2	4	1	5		C		Fundamental
FLR1502	Statistical Physics	3	2	2	0	4	1	5		C		Fundamental
OPTIONAL COURSE 4 (Year II, Semester 4) package FLX5406												
FLR1602	Numerical and Simulation Method Speciality in Physics	4	2	0	1	3	4	7		C		Fundamental
FLR1407	Physics of Fluid Speciality	4	2	0	1	3	4	7		C		Fundamental
OPTIONAL COURSE 5 (Year III, Semester 5) package FLX5506												
FLR1502	Statistical Physics	3	2	2	0	4	1	5		C		Fundamental
FLR2504	Virtual Instrumentation	3	2	0	2	4	1	5		C		Fundamental
OPTIONAL COURSE 6 (Year III, Semester 6) package FLX5608												
FLR1402	Electrodynamics	3	2	2	0	4	1	5		C		Field of Study
FLR1603	Subatomic particles	3	2	1	1	4	1	5		C		Field of Study
OPTIONAL COURSE 7 (Year IV, Semester 7) package FLX5708												
XLX0303	Optional course held at an other Faculty	3	2	0	1	3	2	5		C		Complementary
FLR3506	Medical Apparatus	3	2	0	1	3	2	5		C		Complementary
OPTIONAL COURSE 8 (Year IV, Semester 8) package FLX5805												
MLR5002	Computer Networks	5	2	1	1	4	5	9		C		Field of Study
FLR5807	Nuclear Materials and Reactors	5	2	1	1	4	5	9		C		Field of Study
Credits / Hours / Week / Assesment / % from total number of courses		24	14	6	5	25	16	41	0	0	0	10.14%
Hours / week - Hours for study / week			196	84	70	350	224	574				
			350			574						

OPTIONS FOR FOREIGN LANGUAGE 1 & 2

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Foreign Language 1 (Year I, Semester 1)												
LLU0011	English (1)	3	0	2	0	2	3	5		C		Complementary
LLU0021	French (1)	3	0	2	0	2	3	5		C		Complementary
LLU0031	German (1)	3	0	2	0	2	3	5		C		Complementary
Foreign Language 2 (Year I, Semester 2)												
LLU0012	English (2)	3	0	2	0	2	4	6		C		Complementary
LLU0022	French (2)	3	0	2	0	2	4	6		C		Complementary
LLU0032	German (2)	3	0	2	0	2	4	6		C		Complementary

FACULTATIVE COURSES

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Year I, Semester 1												
PLR0101	Psychology	5	2	2	0	4	5	9		C		Complementary
Year I, Semester 2												
PLR0102	Pedagogy I	5	2	2	0	4	5	9		C		Complementary
Year II, Semester 3												
LLU0#3	Foreign Language 3 (diferrent from that in Year I, Sem.1)	3	0	2	0	2	3	5		C		Complementary
PLR0302	Pedagogy II	5	2	2	0	4	5	9		C		Complementary
Year II, Semester 4												
LLU00#4	Foreign Language 4 (diferrent from that in Year I, Sem.2)	3	0	2	0	2	3	5		C		Complementary
PLR0402	Didactics of Speciality	5	2	2	0	4	5	9		C		Complementary
Year III, Semester 5												
PLR0501	Pedagogical Traineeship 1	3	0	0	3	3	2	5		C		Complementary
PLR0502	IAC	2	1	1	0	2	2	4		C		Complementary
Year III, Semester 6												
PLR0601	Pedagogical Traineeship 2	2	0	0	3	3	1	4		C		Complementary
PLR0602	Class management	3	1	1	0	2	4	6		C		Complementary
Credits / Hours / Week / Assesment / % from total number of courses		21	4	8	6	18	19	37	0	6	0	8.70%
Hours / week - Hours for study / week			56	112	78	246	264	510				
			246			510						

Appendix to the Curriculum for Programme of Study: ENGINEERING PHYSICS

FUNDAMENTAL COURSES (Fundamental)												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
MLR1101	Algebra	5	2	2	0	4	5	9	E			Fundamental
MLR1102	Mathematical Analysis	5	2	2	0	4	5	9	E			Fundamental
CLR1104	Chemistry	3	2	0	1	3	2	5	E			Fundamental
FLR5105	Computer Aided Design. Technical Drawing	4	2	0	2	4	3	7	E			Fundamental
FLR1202	Differential Equations of Theoretical Physics	5	2	2	0	4	5	9	E			Fundamental
FLR1103	Mecanics and Acustics	8	3	2	2	7	7	14	E			Fundamental
FLR1303	Fundamentals of Theoretical Physics	5	3	2	0	5	4	9	E			Fundamental
FLX5304	Optional course 3	3	2	1	1	4	1	5		C		Fundamental
FLX5406	Optional course 4	4	2	0	1	3	4	7		C		Fundamental
FLX5506	Optional course 5	3	2	1	1	4	1	5		C		Fundamental
Credits / Hours / Week / Assesment / % from total number of courses		45	22	12	8	42	37	79	7	3	0	14.49%
Hours / week - Hours for study / week			308	168	112	588	518	1106				
			588			1106						

COURSES INFIELD OF STUDY (Field of Study)

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLR1201	Heat	8	3	2	2	7	7	14	E			Field of Study
FLR1203	Electricity and Magnetism	8	3	2	2	7	7	14	E			Field of Study
FLR5206	Oscillation and Waves	3	2	1	0	3	2	5	E			Field of Study
FLR1301	Optics	8	3	2	2	7	7	14	E			Field of Study
FLR1302	Electronics	8	3	2	2	7	7	14	E			Field of Study
FLR1401	Atomic physics	5	2	1	1	4	5	9	E			Field of Study
FLR1402	Nuclear physics	5	2	2	0	4	5	9	E			Field of Study
FLR1404	Quantum Mecanics	5	3	2	0	5	4	9	E			Field of Study
FLR5403	Microprocessors. Computers	4	2	0	2	4	3	7	E			Field of Study
FLR1501	Physics of Molecule	5	2	1	1	4	5	9	E			Field of Study
FLR1503	Solid State Physics	6	2	2	1	5	6	11	E			Field of Study
FLR1504	Spectroscopy and Lasers	5	2	1	1	4	5	9	E			Field of Study
FLR1505	Plasma Physics and Applications	5	2	1	1	4	5	9	E			Field of Study
ILR0004	Management	3	2	2	0	4	1	5		C		Field of Study
FLR5602	Technological Applications of Lasers. Biophotonics	4	2	1	1	4	3	7	E			Field of Study
FLR5605	Non-Polluting Energy Technologies	5	2	0	1	3	6	9	E			Field of Study
FLX5608	Optional course 6	3	2	0	2	4	1	5		C		Field of Study
FLR5707	Modern methods and technics of microscopic analysis	4	2	1	1	4	3	7	E			Field of Study
FLR5706	OptoElectronics	3	2	0	1	3	2	5	E			Field of Study
FLR5802	Physical Methods for Non-Destructive Measurements and Control	5	2	1	1	4	5	9	E			Field of Study
FLX5805	Optional course 8	5	2	1	1	4	5	9		C		Field of Study
FLR5806	Bachelor Thesis writing	3	0	0	8	7	1	8			VP	Field of Study
Credits / Hours / Week / Assesment / % from total number of courses		110	47	25	31	102	95	197	18	3	1	30.43%
Hours / week - Hours for study / week			658	350	434	1428	1330	2758				
			1442			2758						

SPECIALITY COURSES (Speciality)													
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type	
			C	S	LP	F	I	T	E	C	VP		
FLR5107	Engineering Design I	2	1	0	1	2	2	4	E			Speciality	
FLR5306	Materials resistance	3	2	0	1	3	2	5		C		Speciality	
FLR5405	Electrotechnics	4	2	1	1	4	3	7	E			Speciality	
FLR5407	Traineeship	3	0	0	2	2	0	2		C		Speciality	
FLR5502	Engineering Design II	3	0	0	3	3	2	5		C		Speciality	
FLR1601	Physics of Semiconductors	4	2	1	1	4	3	7	E			Speciality	
FLR5603	Systems and Instrumentation with Sensors	4	2	1	1	4	3	7	E			Speciality	
FLR5604	Introduction to Nanotechnology	4	2	0	1	3	4	7		C		Speciality	
FLR5407	Traineeship	3	0	0	2	2	0	2		C		Speciality	
FLR5701	Physics and Technology of Oxidic Materials	5	2	1	1	4	5	9	E			Speciality	
FLR5702	Physics and Technology of Polymers	5	2	1	1	4	5	9	E			Speciality	
FLR5703	Cryogenic Tehcnologies	3	2	0	1	3	2	5	E			Speciality	
FLR5704	Nuclear Spectroscopy	4	2	1	1	4	3	7	E			Speciality	
FLR5705	Heterogene Materials. Technological Applications	3	2	0	1	3	2	5	E			Speciality	
FLR5706	Optoelectronics	3	2	0	1	3	2	5	E			Speciality	
FLR5803	Physics and Technology of Superconductive Materials	6	2	0	2	4	7	11	E			Speciality	
FLR1604	Physics and Technology of Magnetic Materials	5	2	1	1	4	5	9	E			Speciality	
FLR5806	Bachelor Thesis writing	3	0	0	8	7	1	8			VP	Speciality	
Credits / Hours / Week / Assesment / % from total number of courses		67	27	7	30	63	51	114	12	5	1	24.64%	
Hours / week - Hours for study / week			378	98	420	882	714	1596					
			896			1596							

COMPLEMENTARY COURSES (Complementary)

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLX1106	Foreign Language I	3	0	2	0	2	3	5		C		Complementary
YLU0011	Sports I	0	0	2	0	2	0	2			VP	Complementary
FLX1205	Foreign Language II	3	0	2	0	2	3	5		C		Complementary
YLU0012	Sports II	0	0	2	0	2	0	2			VP	Complementary
FLX5204	Optional course 2	3	2	1	0	3	2	5		C		Complementary
FLX5708	Optional course 7	3	2	0	1	3	2	5		C		Complementary
Credits / Hours / Week / Assesment / % from total number of courses		12	4	9	1	14	10	24	0	4	2	8.70%
Hours / week - Hours for study / week			56	126	14	196	140	336				
			196			336						

FACULTATIVE COURSES

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
PLR0101	Psychology	5	2	2	0	4	5	9		C		Complementary
PLR0102	Pedagogy I	5	2	2	0	4	5	9		C		Complementary
LLU00#3	Foreign Language 3 (diferrent from that in Year I, Sem.1)	3	0	2	0	2	3	5		C		Complementary
PLR0302	Pedagogy II	5	2	2	0	4	5	9		C		Complementary
LLU00#4	Foreign Language 4 (diferrent from that in Year I, Sem.2)	3	0	2	0	2	3	5		C		Complementary
PLR0402	Didactics of Speciality	5	2	2	0	4	5	9		C		Complementary
PLR0501	Pedagogical Traineeship 1	3	0	0	3	3	2	5		C		Complementary
PLR0502	IAC	2	1	1	0	2	2	4		C		Complementary
PLR0601	Pedagogical Traineeship 2	2	0	0	3	3	1	4		C		Complementary
PLR0602	Class management	3	1	1	0	2	3	5		C		Complementary
Credits / Hours / Week / Assesment / % from total number of courses		36	10	14	6	30	34	64	0	10	0	8.70%
Hours / week - Hours for study / week			140	196	84	420	476	896				
			420			896						

OVERALL BALANCE

CODE	COURSES	HOURS	Hours for study / week			%	NUMBER OF CREDITS			
			F	I	T		YEAR I	YEAR II	YEAR III	YEAR IV
1	COMPULSORY	194	194	185	379	89%	57	53	54	52
2	OPTIONAL	25	25	16	41	11%	3	7	6	8
TOTAL		219	219	201	420	100%	60	60	60	60

CURRICULUM starting from Academic year 2015-2016**BABEȘ-BOLYAI UNIVERSITY****FACULTY OF PHYSICS****APPLIED ENGINEERING**

Programme of study: ENGINEERING PHYSICS

Language of instruction: HUNGARIAN

Name of qualification: ENGINEER

Duration of study: 8 SEMESTERS

Type of study: FULL TIME

I. DEGREE STRUCTURE

240 credits, whereof:

216 credits for compulsory courses

including 6 credits for a foreign language (2 semesters),

no credits for passing the test for subject Sports

24 credits for optional course

and

20 credits for Bachelor exam

II. STRUCTURE OF PROGRAMME (in weeks)

	Courses given		Examination period			Traineeship	Holiday		
	Sem I	Sem II	Winter	Spring	Summer		Winter	Spring	Summer
Year I	14	14	3	3	2	0	3	1	12
Year II	14	14	3	3	2	1	3	1	11
Year III	14	14	3	3	2	4	3	1	8
Year IV	14	14	3	2	2	4	3	1	13

REMARKS

Traineeship in Semester 4 is organized after Summer examination period

In Semester 6 Traineeship is organized during Semester

III. WEEKLY STRUCTURE OF THE PROGRAMME (in hours)

	Semester I	Semester II
Year I	28	28
Year II	28	26
Year III	28	26
Year IV	28	27

IV. BACHELOR EXAM - between 24 June - 6 July

Part 1: Basic and speciality knowledge exam = 10 credits

Part 2: Bachelor thesis = 10 credits

V. SELECTION OF OPTIONAL COURSES:

Sem. 1: choosing 1 course from package: NONE

Sem. 2: choosing 1 course from package: FLX5204

Sem. 3: choosing 1 course from package: FLX5304

Sem. 4: choosing 1 course from package: FLX5406

Sem. 5: choosing 1 course from package: FLX5506

Sem. 6: choosing 1 course from package: FLX5608

Sem. 7: choosing 1 course from package: FLX5708

Sem. 8: choosing 1 course from package: FLX5805

For a maximum of 3 optional courses, it is allowed for every student to select any course held at any other Faculty of the Babeș-Bolyai University.

In order to fill a teaching position the graduate must obtain a Certificate issued by the Department of Teacher Training

VI. SIMILAR PROGRAMMES:

Technische Universität Dresden, Germany

Université Joseph Fourier Grenoble, France

University of Cambridge, UK

Karlsruher Institut für Technologie, Germany

Technical University, Hungary

University of Oxford, UK

Eötvös Loránd University, Hungary

University of Debrecen, Hungary

RECTOR,

Acad.Prof.univ.dr. Ioan Aurel POP

DEAN,

Prof.univ.dr. Aurel POP

VII. COURSES

YEAR I / SEMESTER 1												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
MLM1101	Algebra	5	2	2	0	4	5	9	E			Fundamental
MLM1102	Mathematical Analysis	5	2	2	0	4	5	9	E			Fundamental
FLM1103	Mecanics and Acoustics	8	3	2	2	7	7	14	E			Fundamental
CLM1104	Chemistry	3	2	0	1	3	2	5	E			Fundamental
FLM5105	Computer Aided Design. Technical Drawing	4	2	0	2	4	3	7	E			Fundamental
FLX1106	Foreign Language 1 (X = E / English; X = F / French; etc.)	3	0	2	0	2	3	5		C		Complementary
FLM5107	Engineering Design I	2	1	0	1	2	2	4	E			Speciality
YLU0011	Sports 1	0	0	2	0	2	0	2			VP	Complementary
TOTAL		30	12	10	6	28	27	55	6	1	1	

YEAR I / SEMESTER 2												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLM1201	Heat	8	3	2	2	7	7	14	E			Field of Study
FLM1202	Differential Equations of Theoretical Physics	5	2	2	0	4	5	9	E			Fundamental
FLM1203	Electricity and Magnetism	8	3	2	2	7	7	14	E			Field of Study
FLX5204	Optional course 2	3	2	1	0	3	2	5		C		Complementary
FLX1205	Foreign Language 2 (X = E / English; X = F / French; etc.)	3	0	2	0	2	3	5		C		Complementary
FLM5206	Oscillations and Waves	3	2	1	0	3	2	5	E			Field of Study
YLU0012	Sports 2	0	0	2	0	2	0	2			VP	Complementary
TOTAL		30	12	12	4	28	26	54	4	2	1	

YEAR II / SEMESTER 3													
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type	
			C	S	LP	F	I	T	E	C	VP		
FLM1301	Optics	8	3	2	2	7	7	14	E			Field of Study	
FLM1302	Electronics	8	3	2	2	7	7	14	E			Field of Study	
FLM1303	Fundamentals of Theoretical Physics	5	3	2	0	5	4	9	E			Fundamental	
FLX5304	Optional course 3	3	2	1	1	4	1	5		C		Fundamental	
FLR5305	Tehnology of Materials	3	1	0	1	2	3	5		C		Speciality	
FLR5306	Materials resistance	3	2	0	1	3	2	5		C		Speciality	
TOTAL		30	14	7	7	28	24	52	3	3	0		

YEAR II / SEMESTER 4													
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type	
			C	S	LP	F	I	T	E	C	VP		
FLM1401	Atomic physics	5	2	1	1	4	5	9	E			Field of Study	
FLM1402	Physics of Molecule	5	2	2	0	4	5	9	E			Field of Study	
FLM5403	Microprocessors. Computers	4	2	0	2	4	3	7	E			Field of Study	
FLM1404	Quantum mechanics	5	3	2	0	5	4	9	E			Field of Study	
FLM5405	Electrotechnics	4	2	1	1	4	3	7	E			Speciality	
FLX5406	Optional course 4	4	2	0	1	3	4	7		C		Field of Study	
FLM5407	Traineeship	3	0	0	2	2	0	2		C		Field of Study	
TOTAL		30	13	6	7	26	24	50	5	2	0		

YEAR III / SEMESTER 5													
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type	
			C	S	LP	F	I	T	E	C	VP		
FLM1501	Nuclear physics	5	2	1	1	4	5	9	E			Field of Study	
FLR5502	Engineering Design II	3	0	0	3	3	2	5		C		Speciality	
FLM1503	Solid State Phycis	6	2	2	1	5	6	11	E			Field of Study	
FLM1504	Spectroscopy and Lasers	5	2	1	1	4	5	9	E			Field of Study	
FLM1505	Plasma Physics and Applications	5	2	1	1	4	5	9	E			Field of Study	
FLX5506	Optional course 5	3	2	1	1	4	1	5		C		Fundamental	
ILR0004	Management	3	2	2	0	4	1	5		C		Field of Study	
TOTAL		30	12	8	8	28	25	53	4	3	0		

YEAR III / SEMESTER 6													
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type	
			C	S	LP	F	I	T	E	C	VP		
FLM1601	Physics of Semiconductors	4	2	1	1	4	3	7	E			Speciality	
FLR5602	Technological Applications of Lasers. Biophotonics	4	2	1	1	4	3	7	E			Field of Study	
FLM5603	Systems and Instrumentation with Sensors	4	2	1	1	4	3	7	E			Speciality	
FLR5604	Introduction to Nanotechnology	4	2	0	1	3	4	7		C		Speciality	
FLR5605	Non-Polluting Energy Technologies	5	2	0	1	3	6	9	E			Field of Study	
FLM5606	Traineeship	3	0	0	8	8	0	8		C		Field of Study	
FLR5607	Microwaves	3	2	1	1	4	1	5		C		Field of Study	
FLX5608	Optional course 6	3	2	0	2	4	1	5		C		Field of Study	
TOTAL		30	14	4	8	26	21	47	4	4	0		

YEAR IV / SEMESTER 7												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLR5701	Physics and Technology of Oxidic Materials	5	2	1	1	4	5	9	E			Speciality
FLR5702	Physics and Technology of Polymers	5	2	1	1	4	5	9	E			Speciality
FLR5703	Cryogenic Tehcnologies	3	2	0	1	3	2	5	E			Speciality
FLR5704	Nuclear Spectroscopy	4	2	1	1	4	3	7	E			Speciality
FLR5705	Heterogene Materials. Technological Applications	3	2	0	1	3	2	5	E			Speciality
FLM5706	Optoelectronics	3	2	0	1	3	2	5	E			Field of Study
FLR5707	Modern methods and technics of microscopic analysis	4	2	1	1	4	3	7	E			Field of Study
FLX5708	Optional course 7	3	2	0	1	3	2	5		C		Complementary
TOTAL		30	16	4	8	28	24	52	7	1	0	

YEAR IV / SEMESTER 8												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLR5801	Biorobotics	6	2	1	1	4	7	11		C		Speciality
FLR5802	Physical MethoSpeciality for Measurement and Non-Distructive Control	5	2	1	1	4	5	9	E			Field of Study
FLR5803	Physics and Technology of Superconductive Materials	6	2	0	2	4	7	11	E			Speciality
FLM5604	Physics and Technology of Magnetic Materials	5	2	1	1	4	5	9	E			Speciality
FLX5805	Optional course 8	5	2	1	1	4	5	9		C		Field of Study
FLR5806	Bachelor Thesis writing	3	0	0	8	7	1	8			VP	Field of Study
TOTAL		30	10	4	14	27	30	57	3	2	1	

COURSES OPTIONAL													
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type	
			C	S	LP	F	I	T	E	C	VP		
OPTIONAL COURSE 1 (Year I, Semester 1) NONE													
		0	0	0	0	0	0	0					
OPTIONAL COURSE 1 (Year I, Semester 2) package FLX5402													
XLX0201	Optional cours held at an other Faculty	3	2	1	0	3	2	5		C			Complementary
FLM0201	Physics and the Evolution of Knowledge	3	2	1	0	3	2	5		C			Complementary
OPTIONAL COURSE 3 (Year II, Semester 3) package FLX5304													
FLM1304	Applied Informatics in Physics	3	2	0	2	4	1	5		C			Fundamental
XLX0201	Optional cours held at an other Faculty	3	2	1	0	3	2	5		C			Complementary
OPTIONAL COURSE 4 (Year II, Semester 4) package FLX5406													
FLM1602	Numerical and Simmulation Methods in Physics	4	2	0	1	3	4	7		C			Fundamental
FLM0401	Physics of Fluids	4	2	0	1	3	4	7		C			Fundamental
OPTIONAL COURSE 5 (Year III, Semester 5) package FLX5506													
FLM1502	Statistical Physics	3	2	2	0	4	1	5		C			Fundamental
FLM1504	Virtual Instrumentation	3	2	0	2	4	1	5		C			Fundamental
OPTIONAL COURSE 6 (Year III, Semester 6) package FLX5608													
FLM1402	Electrodynamics	3	2	2	0	4	1	5		C			Field of Study
FLM1603	Subatomic Particles	3	2	1	1	4	1	5		C			Field of Study
OPTIONAL COURSE 7 (Year IV, Semester 7) package FLX5708													
XLX0301	Optional course de la alte facultăți	3	2	0	1	3	2	5		C			Complementary
FLM1504	Virtual Instrumentation	3	2	0	2	4	1	5		C			Speciality
FLM0501	Dynamic Systems	3	2	0	1	3	2	5		C			Speciality
OPTIONAL COURSE 8 (Year IV, Semester 8) package FLX5805													
MLM5002	Computer Networks	5	2	1	1	4	5	9		C			Field of Study
FLM5807	Nuclear Materials and Reactors	5	2	1	1	4	5	9		C			Field of Study
FLM1604	Astrophysics and Cosmology	5	2	1	0	3	6	9		C			Speciality
Credits / Hours / Week / Assesment / % from total number of courses		24	14	6	5	25	16	41	0	0	0	0	11.67%
Hours / week - Hours for study / week			196	84	70	350	224	574					
			350			574							

OPTIONS FOR FOREIGN LANGUAGE 1 & 2

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Foreign Language 1 (Year I, Semester 1)												
LLU0011	English (1)	3	0	2	0	2	3	5		C		Complementary
LLU0021	French (1)	3	0	2	0	2	3	5		C		Complementary
LLU0031	German (1)	3	0	2	0	2	3	5		C		Complementary
Foreign Language 2 (Year I, Semester 2)												
LLU0012	English (2)	3	0	2	0	2	3	5		C		Complementary
LLU0022	French (2)	3	0	2	0	2	3	5		C		Complementary
LLU0032	German (2)	3	0	2	0	2	3	5		C		Complementary

FACULTATIVE COURSES												
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
Year I, Semester 1												
PLM0101	Psychology	5	2	2	0	4	5	9		C		Complementary
Year I, Semester 2												
PLM0102	Pedagogy I	5	2	2	0	4	5	9		C		Complementary
Year II, Semester 3												
LLU0#3	Foreign Language 3 (diferrent from that in Year I, Sem.1)	3	0	2	0	2	3	5		C		Complementary
PLM0302	Pedagogy II	5	2	2	0	4	5	9		C		Complementary
Year II, Semester 4												
LLU00#4	Foreign Language 4 (diferrent from that in Year I, Sem.2)	3	0	2	0	2	3	5		C		Complementary
PLM0402	Didactics of Speciality	5	2	2	0	4	5	9		C		Complementary
Year III, Semester 5												
PLM0501	Pedagogical Traineeship 1	3	0	0	3	3	2	5		C		Complementary
PLM0502	IAC	2	1	1	0	2	2	4		C		Complementary
Year III, Semester 6												
PLM0601	Pedagogical Traineeship 2	2	0	0	3	3	1	4		C		Complementary
PLM0602	Class management	3	1	1	0	2	4	6		C		Complementary
Credits / Hours / Week / Assesment / % from total number of courses		21	4	8	6	18	19	37	0	6	0	10.00%
Hours / week - Hours for study / week			56	112	78	246	264	510				
			246			510						

Appendix to the Curriculum for Programme of Study: ENGINEERING PHYSICS

FUNDAMENTAL COURSES (Fundamental)													
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type	
			C	S	LP	F	I	T	E	C	VP		
MLM1101	Algebra	5	2	2	0	4	5	9	E			Fundamental	
MLM1102	Mathematical Analysis	5	2	2	0	4	5	9	E			Fundamental	
CLM1104	Chemistry	3	2	0	1	3	2	5	E			Fundamental	
FLM5105	Computer Aided Design. Technical Drawing	4	2	0	2	4	3	7	E			Fundamental	
FLM1202	Differential Equations of Theoretical Physics	5	2	2	0	4	5	9	E			Fundamental	
FLM1103	Mecanics and Acoustics	8	3	2	2	7	7	14	E			Fundamental	
FLM1303	Fundamentals of Theoretical Physics	5	3	2	0	5	4	9	E			Fundamental	
FLX5304	Optional course 3	3	2	1	1	4	1	5		C		Fundamental	
FLX5406	Optional course 4	4	2	0	1	3	4	7		C		Fundamental	
FLX5506	Optional course 5	3	2	1	1	4	1	5		C		Fundamental	
Credits / Hours / Week / Assesment / % from total number of courses		45	22	12	8	42	37	79	7	3	0	16.67%	
Hours / week - Hours for study / week			308	168	112	588	518	1106					
			588			1106							

COURSES INFIELD OF STUDY (Field of Study)

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLM1201	Heat	8	3	2	2	7	7	14	E			Field of Study
FLM1203	Electricity and Magnetism	8	3	2	2	7	7	14	E			Field of Study
FLM5206	Oscillations and Waves	3	2	1	0	3	2	5	E			Field of Study
FLM1301	Optics	8	3	2	2	7	7	14	E			Field of Study
FLM1302	Electronics	8	3	2	2	7	7	14	E			Field of Study
FLM1401	Atomic physics	5	2	1	1	4	5	9	E			Field of Study
FLM1501	Nuclear physics	5	2	1	1	4	5	9	E			Field of Study
FLM1404	Quantum mechanics	5	3	2	0	5	4	9	E			Field of Study
FLM5403	Microprocessors. Computers	4	2	0	2	4	3	7	E			Field of Study
FLM1402	Physics of Molecule	5	2	2	0	4	5	9	E			Field of Study
FLM1503	Solid State Physcis	6	2	2	1	5	6	11	E			Field of Study
FLM1504	Spectroscopy and Lasers	5	2	1	1	4	5	9	E			Field of Study
FLM1505	Plasma Physics and Applications	5	2	1	1	4	5	9	E			Field of Study
ILR0004	Management	3	2	2	0	4	1	5		C		Field of Study
FLR5602	Technological Applications of Lasers. Biophotonics	4	2	1	1	4	3	7	E			Field of Study
FLR5605	Non-Polluting Energy Technologies	5	2	0	1	3	6	9	E			Field of Study
FLX5608	Optional course 6	3	2	0	2	4	1	5		C		Field of Study
FLR5707	Modern methods and technics of microscopic analysis	4	2	1	1	4	3	7	E			Field of Study
FLM5706	OptoElectronics	3	2	0	1	3	2	5	E			Field of Study
FLR5802	Physical MethoSpeciality for Measurement and Non-Distructive Control	5	2	1	1	4	5	9	E			Field of Study
FLX5805	Optional course 8	5	2	1	1	4	5	9		C		Field of Study
	Elaboration of Bachelor Thesis											Field of Study
Credits / Hours / Week / Assesment / % from total number of courses		107	47	25	23	95	94	189	18	3	0	35.00%
Hours / week - Hours for study / week			658	350	322	1330	1316	2646				
			1330			2646						

SPECIALITY COURSES (Speciality)													
CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type	
			C	S	LP	F	I	T	E	C	VP		
FLM5107	Engineering Design I	2	1	0	1	2	2	4	E			Speciality	
FLR5306	Materials resistance	3	2	0	1	3	2	5		C		Speciality	
FLM5405	Electrotechnics	4	2	1	1	4	3	7	E			Speciality	
FLM5407	Traineeship	3	0	0	2	2	0	2		C		Speciality	
FLR5502	Engineering Design II	3	0	0	3	3	2	5		C		Speciality	
FLM1601	Physics of Semiconductors	4	2	1	1	4	3	7	E			Speciality	
FLM5603	Systems and Instrumentation with Sensors	4	2	1	1	4	3	7	E			Speciality	
FLR5604	Introduction to Nanotechnology	4	2	0	1	3	4	7		C		Speciality	
FLM5407	Traineeship	3	0	0	2	2	0	2		C		Speciality	
FLR5701	Physics and Technology of Oxidic Materials	5	2	1	1	4	5	9	E			Speciality	
FLR5702	Physics and technology of Polymers	5	2	1	1	4	5	9	E			Speciality	
FLR5703	Cryogenic Tehcnologies	3	2	0	1	3	2	5	E			Speciality	
FLR5704	Nuclear Spectroscopy	4	2	1	1	4	3	7	E			Speciality	
FLR5705	Heterogene Materials. Technological Applications	3	2	0	1	3	2	5	E			Speciality	
FLX5708	Optional course 7	3	2	0	1	3	2	5		C		Speciality	
FLR5801	Biorobotics	6	2	1	1	4	7	11		C		Speciality	
FLR5803	Physics and Technology of Superconductive Materials	6	2	0	2	4	7	11	E			Speciality	
FLM5604	Physics and Technology of Magnetic Materials	5	2	1	1	4	5	9	E			Speciality	
	Elaboration of bachelor thesis											Speciality	
Credits / Hours / Week / Assesment / % from total number of courses		70	29	8	23	60	57	117	11	7	0	28.33%	
Hours / week - Hours for study / week			406	112	322	840	798	1638					
			840			1638							

COMPLEMENTARY COURSES (Complementary)

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
FLX1106	Foreign Language 1 (X = E / English; X = F / French; etc.)	3	0	2	0	2	3	5		C		Complementary
YLU0011	Sports 1	0	0	2	0	2	0	2			VP	Complementary
FLX1205	Foreign Language 2 (X = E / English; X = F / French; etc.)	3	0	2	0	2	3	5		C		Complementary
YLU0012	Sports 2	0	0	2	0	2	0	2			VP	Complementary
FLX5204	Optional course 2	3	2	1	0	3	2	5		C		Complementary
Credits / Hours / Week / Assesment / % from total number of courses		9	2	9	0	11	8	19	0	3	2	10.00%
Hours / week - Hours for study / week			28	126	0	154	112	266				
			154			266						

FACULTATIVE COURSES

CODE	COURSES	ECTS Credits	Hours / week			Hours for study / week			Assesment			Course type
			C	S	LP	F	I	T	E	C	VP	
PLM0101	Psychology	5	2	2	0	4	5	9		C		Complementary
PLM0102	Pedagogy I	5	2	2	0	4	5	9		C		Complementary
LLU00#3	Foreign Language 3 (diferrent from that in Year I, Sem.1)	3	0	2	0	2	3	5		C		Complementary
PLM0302	Pedagogy II	5	2	2	0	4	5	9		C		Complementary
LLU00#4	Foreign Language 4 (diferrent from that in Year I, Sem.2)	3	0	2	0	2	3	5		C		Complementary
PLM0402	Didactics of Speciality	5	2	2	0	4	5	9		C		Complementary
PLM0501	Pedagogical Traineeship 1	3	0	0	3	3	2	5		C		Complementary
PLM0502	IAC	2	1	1	0	2	2	4		C		Complementary
PLM0601	Pedagogical Traineeship 2	2	0	0	3	3	1	4		C		Complementary
PLM0602	Class management	3	1	1	0	2	3	5		C		Complementary
Credits / Hours / Week / Assesment / % from total number of courses		36	10	14	6	30	34	64	0	10	0	10.00%
Hours / week - Hours for study / week			140	196	84	420	476	896				
			420			896						

OVERALL BALANCE

CODE	COURSES	HOURS	Hours for study / week			%	NUMBER OF CREDITS			
			F	I	T		YEAR I	YEAR II	YEAR III	YEAR IV
1	COMPULSORY	194	194	185	379	89%	57	53	54	52
2	OPTIONAL	25	25	16	41	11%	3	7	6	8
TOTAL		219	219	201	420	100%	60	60	60	60