Academic Study Program: GENERAL PHYSICS

Studies of First Instance (The Basic Academic Studies)
Length: 4 years
ESPB: 240

P - lecture RV - practice EV – experimental practice
UC- total K- loans

Subject	P	RV	EV	UC	K
I semester					
General Physics I	4	4		8	9
Mathematics for Physicists I	4	4		8	8
Laboratory of Physics I			3	3	3
Data Treatment in Physics	2	3		5	5
Psychology	2			2	2
English Language I	2	2		4	4
Total				30	31
II semester					
General Physics II	4	4		8	9
Mathematics for Physicists II	4	4		8	8
Introduction in Chemistry	4		3	7	5
English Language II	2	2		4	4
Laboratory of Physics II			3	3	3
Total				30	29
III semester					
General Physics III	4	4		8	9
Mathematics for Physicists III	4	4		8	9
Laboratory of Physics III			3	3	3
Introduction in Mathematical Physics	2	3		5	6
Pedagogy	2			2	3
Total				26	30

IV semester					
General Physics IV	4	4		8	9
Laboratory of Physics IV			3	3	3
Introduction in Theoretical Mechanics	3	3		6	7
Introduction in Electronics	2	1	1	4	5
Introduction in Informatics	2		2	4	4
Optional Course	2			2	2
Total				27	30
V semester					
Teaching Aids in Physics I	3		4	7	8
Quantum Theoretical Physics I	2	2		4	5
Introduction in Electrodynamics	3	3		6	7
Computers in Physics Teaching	2		2	4	4
History of Physics	2			2	2
Optional Course	4			4	4
Total				27	30
VI semester					
Physics Didactic I	2	2		4	5
School Practice I	3		3	6	6
Introduction in Atomic Physics	2	1	1	4	5
Physics of Cells and Particles I	2	1	1	4	5
Condensed matter Physics I	2		1	3	4
Physics of Laser and Ionized Gases	3		2	5	5
Total				26	30

VII semester					
Teaching Aids in Physics II	3		5	8	9
Physics Didactic II	3	3		6	7
Quantum Theoretical Physics II	2	2		4	5
Introduction in Statistical Physics	3	3		6	7
Introduction in Astronomy and Astrophysics	2	2		4	4
Total				28	32
VIII semester					
School Practice II	3		2	5	5
Physics of Atoms and Molecules	2	1	2	5	6
Physics of Cells and Particles II	2	1	2	5	6
Condensed Matter Physics II	2		2	4	5
Physical Electronics	2	1	2	5	6
Total				24	28

Optional Courses:

Subject	**UC**	**K**
Computers in audio-visual treatment	2	2
Philosophy of Sciences	2	2
Great Experiments in Physics	2	2
Selected Chapters of Nanophysics	2	2
Selected Chapters of Mathematical Physics	4	4
Introduction in Statistical Physics	4	4
Introduction in Telecommunications	4	4
Introduction in Programming	4	4
Biophysics	2	2
Spectroscopy	2	2
Laboratory of Modern Physics	2	2
Project	4	4
Material Research	4	4
Popularization of Physics	2	2
Theory of Relativity	2	2
Introduction in Chemical Technology	3	4

Studies of Second Instance (Graduation Academic Studies)
Length: 1 year
ESPB: 60

IX semester					
Modern Methods in Pedagogic Research in Physics	6			6	6
Working with Talented Students	6			6	6
Optional Courses	8			8	8
Total				20	20
X semester					
Graduate Work				40	40
Total				40	40

Academic Study Program: THEORETICAL AND EXPERIMENTAL PHYSICS

Studies of First Instance (The Basic Academic Studies)
Length: 4 years
ESPB: 240

P - lecture RV - practice EV – experimental practice
UC- total K- loans

Subject	P	RV	EV	UC	K
I semester					
Physical Mechanics	4	4		8	9
Mathematics I	4	4		8	9
Data Treatment in Physics	2	3		5	5
English Language I	2	2		4	4
Laboratory of Physics I			3	3	3
Total				28	30
II semester					
Molecular Physics and Thermodynamics	4	4		8	9
General Chemistry	2	1		3	3
Mathematics II	4	4		8	9
English Language II	2	2		4	4
Laboratory of Physics II			3	3	3
General Optional Physics	2			2	2
Total				28	30
III semester					
Mathematics III	4	4		8	9
Electromagnetism	4	4		8	9
Mathematical Physics I	4	3		7	7
Laboratory of Physics III			3	3	3
General Optional Course	2			2	2
Total				28	30
IV semester					
Mathematics IV	4	4		8	8
Waves and Optics	4	4		8	8
Theoretical Mechanics	4	4		8	8
Laboratory of Physics IV			3	3	3
Computer Programming	2			2	3
Total				29	30
V semester					
Quantum Mechanics I	3	2		5	5
Electrodynamics I	2	2		4	5
Mathematical Physics II	4	4		8	9
Physical Electronics	4	2	3	9	9
Statistical Physics I	2	2		4	4
Total				30	32
VI semester					
Electrodynamics II	2	2		4	5
Quantum Mechanics II	3	2		5	6

Physics of Atoms	4	2	3	9	9
Statistical Physics II	2	2		4	4
Seminar do Modern Physics	2			2	2
General Optional Course	2			2	2
Total				26	28

Theoretical Block					
VII semester					
Nuclear Physics	4	2	2	8	8
Quantum Theory of Fields	2	2		4	5
Quantum Statistical Physics	4	4		8	8
Symmetry in Physics	3	2		5	5
Total				25	26
VIII semester					
Theory of the Condensed Matter Physics	4	2		6	7
Theory of Elementary Particles	3	2		5	6
Physics of Molecules	4	2	3	9	9
Quantum Electrodynamics	2	2		4	5
Project	2	3		5	7
Total				29	34

Experimental Block					
VII semester					
Nuclear Physics (E)	4	2	4	10	10
Quantum Theory of Fields	2	2		4	5
Quantum Optics	2		2	4	5
Metrology	2		3	5	5
Physics of Ionized Gases (E)	2		3	5	6
Total				28	31
VIII semester					
Condensed Matter Physics	4		3	7	7
Elementary Particles Physics (E)	2		3	5	6
Physics of Molecules	4	2	3	9	9
Project	2		3	5	7
Total				26	29

General Optional Courses

Subject	UC	K
Foreign Language	2	2
Psihology	2	2
Pedagogy	2	2
Laboratory of Modern Physics	2	2
Philosophy of Physics	2	2
Physics History	2	2
Ecology for Physicists	2	2
General Biophysics	2	2
General Astrophysics	2	2
General Astronomy	2	2
General Meteorology	2	2
Physics and Mathematics Workshop	2	2

Studies of Second Instance (Graduation Academic Studies)
Length: 1 year
ESPB: 60

Theoretical Block					
IX semester					
Physics of Plasma	3	2		5	7
Optional Course				20	14
Total				25	21
X semester					
Graduation Work				30	39
Total				30	39

Experimental Block					
IX semester					
Numerical Methods and Simulations in Physics (E)	2		3	5	7
Optional Course				20	14
Total				25	21
X semester					
Graduation Work				30	39
Total				30	39

Optional Courses from the 5th Year of Study

Subject	UC	K
Physics of Nanotubes	10	7
Geometrisation of Physics	10	7
Quantum Theory of Diffusion	10	7
Selected Chapters of Nanophysics	10	7
Numerical Methods in Physics	10	7
Quantum Theory of Fields II	10	7
Teorija gravitacije I	10	7
Higher Course of Nuclear Physics	10	7
Higher Course of Particle Physics	10	7
Nondestructive Analyses	10	7
Theory of Diffusion	10	7
Theoretical Atomic Physics	10	7
Interaction of Atomic Particles with Hard Body Surfaces	10	7
Theoretical Molecule Physics	10	7
Laser Cooling and Atoms Captives	10	7
Selected Chapters of Atomic and Molecule Physics	10	7
Physics of Atomic Collisions	10	7
Selected Chapters of Atomic Collisions Theory	10	7
Theory of Phase Transitions	10	7
Superconductors	10	7
Physics of Magnetic Systems	10	7
Physics of No regular Systems	10	7
Methods of Quantum Theory of Fields in Condensed Matter Physics	10	7
Nonlinear Phenomena in Condensed Systems	10	7
Selected Chapters of Condensed Matter Physics	10	7
Semiconductors	10	7
Physics of Dielectrics	10	7
Condensed Matter Physics Spectroscopy	10	7
Structure and Dynamics of Condensed Systems	10	7
Physics of Polymers	10	7
Physics of Crystals Growth	10	7
Selected Experimental Methods of Condensed Matter Physics	10	7
Application of Symmetry in Condensed Matter Physics (E)	10	7
Coherent Rays Sources	10	7
Laser Spectroscopy and Atomic Optics	10	7
Special Chapters of Quantum Optics	10	7
Introduction in Hydrodynamic Plasma	10	7
Introduction in Experimental Methods of Physics of Ionized Gases	10	7
Introduction in Quantum and Nonlinear Optics	10	7
Numerical Data Treatment	10	7

Academic Study Program: APPLIED AND COMPUTER PHYSICS

Studies of First Instance (The Basic Academic Studies)
Length: 4 years
ESPB: 240

P - lecture RV - practice EV – experimental practice
UC- total K- loans

Subject	P	RV	EV	UC	K
I semester					
Physical Mechanics	4	4		8	9
Mathematics I	4	4		8	8
Data Treatment in Physics	2	3		5	5
English Language I	2	2		4	4
Laboratory of Physics I			3	3	3
Total				28	29
II semester					
Molecular Physics and Thermodynamics	4	4		8	9
General Chemistry	2	1		3	3
Mathematics II	4	4		8	8
Computer Programming I	2		2	4	4
English Language II	2	2		4	4
Laboratory of Physics II			3	3	3
Total				30	31
III semester					
Mathematics III	4	4		8	8
Electromagnetism	4	4		8	9
Introduction in Mathematical Physics	2	2		4	5
Numerical Methods in Physics	2	2		4	5
Laboratory of Physics IV			3	3	3
Total				27	30
IV semester					
Mathematics IV	4	4		8	8
Waves and Optics	4	4		8	9
Classical Theoretical Physics I	3	2		5	5
Introduction in Computer Technic	2		2	4	5
Laboratory of Physics IV			3	3	3
Total				28	30
V semester					
Note: Student is choosing one of the two optional courses					
Klasical Theoretical Physics II	2	2		4	5
Electronics for Physicists	4	2	3	9	9
Quantum Physics	3	2		5	6
Introduction in Informatics Systems	2		2	4	5

Sensors	2	2		4	5
Introduction in Mass Spectroscopy	2	2		4	5
Total				26	30
VI semester					
Note: Student is choosing one of the two optional courses					
Classical Theoretical Physics III	2	2		4	4
Introduction in Atomic Physics	4	2	3	9	9
Automatic Management	2	2		4	4
Electrical Measuring	2		3	5	5
Thermotechnics	2	2		4	4
Applied Spectroscopy	2		2	4	4
Measuring and Controlling Systems in Industry and Energetic	2		2	4	4
Total				30	30
VII semester					
Note: The total loans of the optional courses have to be at least 30					
Physics of Cells and Particles	4	2	3	9	10
Introduction in Physics of Ionized Gases	2		1	3	3
Quantum Optics	2	2		4	4
Computer Programming II	2		2	4	4
Electrotehnics	2	2		4	4
Physics and Techniques of the Vacuum	2		2	4	5
Energetic	2			2	3
Protection and Safety Systems in Industry	2			2	2
Total				30	30
VIII semester					
Note: Student is choosing two of the tree optional courses					
Condensed Matter Physics	4		3	7	8
Metrology and Standardization	4		3	7	7
Physics of Ecology	2		2	4	5
Data Bases	2	2		4	5
Geometrical Optics and Optic Instruments	2	2		4	5
Measuring – Instrumental Technique	2		2	4	5
Total				28	30

Studies of Second Instance (Graduation Academic Studies)
Length: 1 year
ESPB: 60

IX semester					
Optional Courses					
Total				28	30
X semester					
Graduation Work				28	30
Total				28	30

Optional Courses from the 5th Year of Study

Subject	UC	K
Special Course of Mathematics	6	6
Net Programming	6	6
Microcontroller Programming	6	6
Opšta metrologija	6	6
Selected Chapters of Modern Physics	6	6
Selected Chapters of Metrology	6	6
Automatisation of Measuring Process	6	6
Application of Lasers in Industry	6	6
Introduction in Telecommunications	6	6
Researching of Materials	6	6

Academic Study Program: PHYSICS AND INTRODUCTION IN TECHNICS

Studies of First Instance (The Basic Academic Studies)
Length: 3 years
ESPB: 180

P - lecture RV - practice EV – experimental practice
UC- total K- loans

Subject	P	RV	EV	UC	K
I semester					
General Physics I	4	4		8	9
Mathematics for Physicists I	4	4		8	8
Laboratory of Physics I			3	3	3
Data Treatment in Physics	2	3		5	5
Psychology	2			2	2
English Language I	2	2		4	4
Total				30	31
II semester					
General Physics II	4	4		8	9
Mathematics for Physicists II	4	4		8	9
Introduction in Chemistry	4		3	7	5
English Language II	2	2		4	4
Laboratory of Physics II			3	3	3
Total				30	29
III semester					
General Physics III	4	4		8	9
Mathematics for Physicists III	4	4		8	9
Laboratory of Physics III			3	3	3
Introduction in Mathematical Physics	2	3		5	6
Pedagogy	2			2	3
Total				26	30

IV semester					
General Physics IV	4	4		8	9
Laboratory of Physics IV			3	3	3
Introduction in Theoretical Mechanics	3	3		6	7
Introduction in Electronics	2	1	1	4	5
Introduction in Informatics	2	2		4	4
Optional Course	2			2	2
Total				27	30
V semester					
Teaching Aids in Physics I	3		4	7	8
Quantum Theoretical Physics I	2	2		4	5
Introduction in Electrodynamics	3	3		6	7
Computers in Physics Teaching	2		2	4	4
History of Physics	2			2	2
Optional Course	4			4	4
Total				27	30
VI semester					
Physics Didactic I	2	2		4	5
School Practice I	3		3	6	6
Introduction in Atomic Physics	2	1	1	4	5
Physics of Cells and Particles I	2	1	1	4	5
Condensed matter Physics I	2		1	3	4
Physics of Laser and Ionized Gases	3		2	5	5
Total				26	30

Studies of Second Instance (Graduation Academic Studies)
Length: 2 years
ESPB: 120

VII semester					
Didactics of Technical Education I	2	1		3	4
Teaching Aids in Technical Education I	1		3	4	5
Technical Drawing	2		2	4	5
Introduction in Mechanical Technique	2		4	6	6
Technology of Material Treatment	2		3	5	5
Energetic	2			2	3
Physical Basics of Thermotechnics	2			2	3
Total				26	31
VIII semester					
Didactics of Technical Education II	2	1		3	3
Teaching Aids in Technical Education II	1		3	4	4
School Practice	2		2	4	4
Electrotehnics	2		2	4	4
Introduction in Chemical Technology	3			3	3
Eco-Physics	2			2	3
Optional Course	8			8	8
Total				28	29
IX semester					
Modern Methods in Pedagogic Research in Physics	6			6	6
Working with Talented Students	6			6	6
Optional Courses	8			8	8
Total				20	20
X semester					
Graduate Work				40	40
Total				40	40

Optional Courses:

Subject	UC	K
Computers in audio-visual treatment	2	2
Philosophy of Sciences	2	2
Great Experiments in Physics	2	2
Selected Chapters of Nanophysics	2	2
Selected Chapters of Mathematical Physics	4	4
Physics and Ecology	2	2
Introduction in Telecommunications	4	4
Introduction in Programming	4	4
Biophysics	2	2
Spectroscopy	2	2
Laboratory of Modern Physics	2	2
Project	4	4
Material Research	4	4
Popularization of Physics	2	2
Introduction in Chemical Technology	4	4
Theory of Relativity	2	2

Academic Study Program: PHYSICS AND CHEMISTRY

Studies of First Instance (The Basic Academic Studies)
Length: 4 years
ESPB: 240

P - lecture RV - practice EV – experimental practice
UC- total K- loans

Subject	P	RV	EV	UC	K
I semester					
Physics I	4	3	3	10	10
General and Inorganic Chemistry I	4	2	4	10	10
Mathematics I	4	4		8	8
English Language I	2			2	2
Total				30	30
II semester					
Physics II	4	3	3	10	10
General and Inorganic Chemistry II	4	2	4	10	10
Mathematics II	4	4		8	8
English Language II	2			2	2
Total				30	30
III semester					
Physics III	4	4	3	11	11
Analytical Chemistry I	2		6	8	8
Physical Chemistry I	2		1	3	3
Organic Chemistry I	4		4	8	8
Total				30	30
IV semester					
Physics IV	4	4	3	11	11
Analytical Chemistry II	2		6	8	8
Physical Chemistry II	2		1	3	3
Organic Chemistry II	4	2	2	8	8
Total				30	30

V semester					
Introduction in Clasical Theoretical Physics I	3	2		5	5
Introduction in Atomic and Quantum Physics I	3	1	2	6	6
History of Physics	2			2	2
Organic Chemistry III	2			2	2
Industrial Chemistry I	2			2	2
Chemistry of the Environment	2		2	4	4
Chemistry of Natural Products	2		3	5	5
Psychology	2			2	2
History of Chemistry	2			2	2
Total				30	30
VI semester					
Introduction in Clasical Theoretical Physics II	3	2		5	5
Introduction in Atomic and Quantum Physics II	3	1	2	6	7
Organic Chemistry IV	2		4	6	6
Industrial Chemistry II	2		3	5	5
Bio-Chemistry	2		3	5	5
Pedagogy	2			2	2
Total				29	30
VII semester					
Introduction in Physics of Cells and Particles I	2	1	1	4	4
Introduction in Condensed Matter Physics	3		2	5	5
Computers in Physics Teaching	2		2	4	4
Teaching Aids of Physics I	1		2	3	3
Didactic of Physics I	2		2	4	4
Didactic of Chemistry I	2		2	4	4
School Experiments in Chemistry Teaching	2		4	6	6
Total				30	30

VIII semester					
Introduction in Physics of Cells and Particles II	2	1	1	4	4
Introduction in Physics of Ionized Gases	2		3	5	5
Teaching Aids of Physics II	1		2	3	3
Didactic of Physics II	2	2	4	8	9
Didactic of Chemistry II	2		6	8	9
Total				28	30

Studies of Second Instance (Graduation Academic Studies)
Length: 1 year
ESPB: 60

IX semester					
Methodology of Pedagogic Resarch in Chemistry Teaching	4		8	12	12
Modern Methods in Physics Teaching	6			6	6
Optional Course 1	2		4	6	6
Optional Course 2	2		4	6	6
Total				30	30
X semester					
Graduate Work				30	30
Total				30	30

Optional Courses on the 5th Year of Study:

Subject	**UC**	**K**
Selected Chapters of Inorganic Chemistry	6	6
Selected Chapters of Organic Chemistry	6	6
Selected Chapters of Analytical Chemistry	6	6
Selected Chapters of Biochemistry	6	6
Modern Forms of Chemistry Teaching	6	6
Pedagogic Psychology	6	6
Develop Psychology	6	6
History of Chemistry II	6	6

Academic Study Program: METEOROLOGY

Studies of First Instance (The Basic Academic Studies)
Length: 4 years
ESPB: 240

P - lecture RV - practice EV – experimental practice
UC- total K- loans

Subject	P	RV	EV	UC	K
I semester					
Mathematics I	4	4		8	9
Physical Mechanics	4	3	3	10	11
General Meteorology I	3	3		6	6
English Language I	2	2		4	4
Total				28	30
II semester					
Mathematics II	4	4		8	9
Thermodynamics	4	3	3	10	11
General Meteorology II	3	3		6	6
English Language II	2	2		4	4
Total				28	30
III semester					
Mathematics III	4	4		8	8
Introduction in Mathematical Physics	2	2		4	5
Electromagnetism and Atomics	4	2	3	9	9
Meteorological Measurements	3		5	8	8
Total				29	30
IV semester					
Mathematics IV	4	4		8	8
Statistics in Meteorology	3	1	2	6	7
Physics of Continuum	4	3		7	7
Meteorological Information	3		5	8	8
Total				29	30
V semester					
Dynamic Meteorology I	4	4		8	10
History of Meteorology	4			4	6
Climatology	3		3	6	6
Weather Analysis	3		5	8	10
Total				26	32
VI semester					
Dynamic Meteorology II	4	4		8	10
Micrometeorology	3		3	6	6
Dynamic of the Clouds	3	3		6	6
Applied Meteorology	3		3	6	6
Total				26	28

VII semester					
Note: Student is choosing four of the optional courses					
Modeling of the Atmosphere I	3		3	6	8
Assimilation of Data	3		3	6	7
Microphysics of the Clouds	3		3	6	8
General Circulation of Atmosphere	3		3	6	7
Turbulation of Atmosphere	3		3	6	8
Atmospheric Chemistry	3		3	6	8
Total				24	30
VIII semester					
Note: Student is choosing four of the optional courses					
Modeling of the Atmosphere II	3		3	6	8
Modification of the Weather	3		3	6	7
Weather Forecast	3		3	6	8
Distance Measurements	3		3	6	7
Aircraft Meteorology	3		3	6	7
Agrometeorology	3		3	6	7
Seminar Work				6	8
Total				30	30

Studies of Second Instance (Graduation Academic Studies)
Length: 1 year
ESPB: 60

IX semester					
Note: Student is choosing four of the optional courses					
Weather Analysis and Weather Forcast Workshop			5	5	8
Atmospheric Electricity	3		3	6	8
Rays in Atmosphere	3		3	6	7
Transport of the Contamined Matherials in Atmosphere	3		3	6	8
Meteorological Aspects of the Meteorološki Human Environment	3		3	6	7
Changing of the Weather	3		3	6	8
Geophysics			6	6	7
Total				30	30
X semester					
Graduation Work				30	30
Total				30	30