

## STUDY PROGRAMME CURRICULUM PHYSICS

Name of study programme	<b>Physics</b>
Programme characteristics	
Type	master's
Cycle	master
University of Ljubljana members	• Faculty of Mathematics and Physics, Jadranska ulica 19, 1000 Ljubljana, Slovenija

### Condensed matter physics (direction/track)

#### Year 1

	University Course Code	Course title	Lecturers	Contact hours					Individual student work	Total hours	ECTS	Semesters	Elective
				Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study					
1.	0079959	Seminar I	Anton Ramšak, Denis Arčon	0	90	0	0	0	30	120	4	All-year	no
2.	0079963	Introduction to research work	Boštjan Golob	0	0	0	0	30	60	90	3	1st semester	no
3.	0078737	Condensed matter physics	Janez Bonča	45	0	30	0	0	165	240	8	1st semester	no
4.	0111751	Electives							510	510	17	1st semester	yes
5.	0640259	Solid state theory	Janez Bonča	45	15				150	210	7	2nd semester	no
6.	0078739	Master thesis research 1	Boštjan Golob	0	0	0	0	60	240	300	10	2nd semester	no
7.	0111753	Electives							330	330	11	2nd semester	yes
		Total		90	105	30	0	90	1485	1800	60		

#### Year 2

	University Course Code	Course title	Lecturers	Contact hours					Individual student work	Total hours	ECTS	Semesters	Elective
				Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study					

1.	0079964	Seminar 2	Peter Križan	0	45	0	0	0	75	120	4	1st semester	no
2.	0159172	Statistical physics	Anton Ramšak, Marko Žnidarič	45	0	30	0	0	165	240	8	1st semester	no
3.	0111754	Electives							540	540	18	1st semester	yes
4.	0078742	Master thesis research 2	Boštjan Golob	0	0	0	0	120	480	600	20	2nd semester	no
5.	0111755	Electives							300	300	10	2nd semester	yes
Total				45	45	30	0	120	1560	1800	60		

### Physics of elementary particles and nuclei (direction/track)

#### Year 1

	University Course Code	Course title	Lecturers	Contact hours					Individual student work	Total hours	ECTS	Semesters	Elective
				Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study					
1.	0079906	Seminar I	Anton Ramšak, Denis Arčon	0	90	0	0	0	30	120	4	All-year	no
2.	0078684	Nuclei, quarks, leptons	Peter Križan, Svjetlana Fajfer	45	30	0	0	0	165	240	8	1st semester	no
3.	0079910	Introduction to research work	Boštjan Golob	0	0	0	0	30	60	90	3	1st semester	no
4.	0111756	Electives							510	510	17	1st semester	yes
5.	0078686	Master thesis research 1	Boštjan Golob	0	0	0	0	60	240	300	10	2nd semester	no
6.	0159162	Advanced particle detectors and data analysis	Boštjan Golob, Peter Križan	30	0	15	0	0	105	150	5	2nd semester	yes
7.	0111758	Electives							390	390	13	2nd semester	yes
Total				75	120	15	0	90	1500	1800	60		

#### Year 2

			Contact hours
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	University Course Code	Course title	Lecturers	Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study	Individual student work	Total hours	ECTS	Semesters	Elective
1.	0079911	Seminar 2	Peter Križan	0	45	0	0	0	75	120	4	1st semester	no
2.	0159173	Theory of elementary particles and nuclei	Svjetlana Fajfer	45	15	0	0	0	150	210	7	1st semester	no
3.	0111759	Electives							570	570	19	1st semester	yes
4.	0078689	Master thesis research 2	Boštjan Golob	0	0	0	0	120	480	600	20	2nd semester	no
5.	0111760	Electives							300	300	10	2nd semester	yes
		Total		45	60	0	0	120	1575	1800	60		

Year 1, Electives: Physics of elementary particles and nuclei

				Contact hours									
	University Course Code	Course title	Lecturers	Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study	Individual student work	Total hours	ECTS	Semesters	Elective
1.	0078693	Advanced chapters in mathematics for physicists	Janez Mrčun, Pavle Saksida, Sašo Strle	45	0	30	0	0	105	180	6	1st semester	yes
2.	0079917	Experimental Nuclear and particle Physics	Peter Križan	30	0	15	0	0	105	150	5	1st semester, 2nd semester	yes
3.	0079923	Experiments in physics 1	Peter Križan	0	0	60	0	0	60	120	4	1st semester	yes
4.	0079946	Experiments in physics 2	Peter Križan	0	0	60	0	0	60	120	4	2nd semester	yes
5.	0159166	Photonics 1	Irena Drevenšek Olenik	45	0	30	0	0	165	240	8	1st semester	yes
6.	0535766	Quantum field theory	Saša Prelovšek-Komelj	45	0	15	0	0	150	210	7	1st semester	yes
7.	0079929	Model analysis 1	Simon Širca	30	0	30	0	0	180	240	8	1st semester	yes

8.	0079948	Model analysis 2	Simon Širca	30	0	45	0	0	165	240	8	1st semester, 2nd semester	yes
9.	0078713	Theory of dynamical systems	Tomaž Prosen	45	0	15	0	0	150	210	7	1st semester	yes
10.	0079938	The use of microprocessors	Dušan Ponikvar	30	0	30	0	0	90	150	5	1st semester, 2nd semester	yes
11.	0079939	Advanced quantum mechanics	Anton Ramšak, Tomaž Prosen	45	0	30	0	0	135	210	7	1st semester	yes
12.	0159167	Cosmology and particles in the early universe	Borut Bajc, Miha Nemevšek, Sašo Grozdanov	45	15	15	0	0	135	210	7	1st semester, 2nd semester	yes
13.	0114395	Symmetry in physics	Jernej Fesl Kamenik, Primož Zihel	30	0	15	0	0	165	210	7	1st semester, 2nd semester	yes
14.	0078627	Simplektična geometrija in intergrabilnost	Pavle Saksida	30	0	15	0	0	105	150	5	1st semester	yes
15.	0112196	Statistical physics	Anton Ramšak, Marko Žnidarič	45	0	30	0	0	165	240	8	1st semester	yes
16.	0078770	Advanced computational physics	Tomaž Prosen	45	0	45	0	0	150	240	8	1st semester	yes
17.	0079953	General Theory of Relativity	Sašo Grozdanov	45	0	15	0	0	150	210	7	1st semester, 2nd semester	yes
Total				585	15	495	0	0	2235	3330	111		

Students in track/orientation Physics of elementary particles and nuclei can select Measurement of ionic radiation from academic bachelor study programme Physics.

Students of Year 1 can select max. 6 ECTS from open electives lists. The selectio of the faculty.n is approved by the comission of the faculty.

Year 2, Electives, Physics of elementary particles and nuclei

	Contact hours	
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	University Course Code	Course title	Lecturers	Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study	Individual student work	Total hours	ECTS	Semesters	Elective
1.	0078693	Advanced chapters in mathematics for physicists	Janez Mrčun, Pavle Saksida, Sašo Strle	45	0	30	0	0	105	180	6	1st semester	yes
2.	0079917	Experimental Nuclear and particle Physics	Peter Križan	30	0	15	0	0	105	150	5	1st semester, 2nd semester	yes
3.	0079923	Experiments in physics 1	Peter Križan	0	0	60	0	0	60	120	4	1st semester	yes
4.	0079946	Experiments in physics 2	Peter Križan	0	0	60	0	0	60	120	4	2nd semester	yes
5.	0159166	Photonics 1	Irena Drevenšek Olenik	45	0	30	0	0	165	240	8	1st semester	yes
6.	0079948	Model analysis 2	Simon Širca	30	0	45	0	0	165	240	8	1st semester, 2nd semester	yes
7.	0079953	General Theory of Relativity	Sašo Grozdanov	45	0	15	0	0	150	210	7	1st semester, 2nd semester	yes
8.	0078713	Theory of dynamical systems	Tomaž Prosen	45	0	15	0	0	150	210	7	1st semester	yes
9.	0079938	The use of microprocessors	Dušan Ponikvar	30	0	30	0	0	90	150	5	1st semester, 2nd semester	yes
10.	0159167	Cosmology and particles in the early universe	Borut Bajc, Miha Nemevšek, Sašo Grozdanov	45	15	15	0	0	135	210	7	1st semester, 2nd semester	yes
11.	0078756	Quantum Optics	Rainer Oliver Kaltenbaek	30	0	15	0	0	105	150	5	1st semester	yes
12.	0078627	Simpleklična geometrija in intergrabilnost	Pavle Saksida	30	0	15	0	0	105	150	5	1st semester	yes
13.	0112196	Statistical physics	Anton Ramšak,	45	0	30	0	0	165	240	8	1st semester	yes

			Marko Žnidarič										
14.	0112198	Gauge field theory	Svjetlana Fajfer	30	15	0	0	0	165	210	7	2nd semester	yes
15.	0078770	Advanced computational physics	Tomaž Prosen	45	0	45	0	0	150	240	8	1st semester	yes
16.	0544097	Laboratory of Machine Learning Methods in Physics	Borut Paul Kerševan, Jernej Fesl Kamenik	30	0	45	0	0	105	180	6	1st semester	yes
Total				525	30	465	0	0	1980	3000	100		

Students of Year 2 can select max. 6 ECTS from open electives lists. The selectio of the faculty.n is approved by the comission of the faculty.

### Technical physics and photonics (direction/track)

#### Year 1

	University Course Code	Course title	Lecturers	Contact hours					Individual student work	Total hours	ECTS	Semesters	Elective
				Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study					
1.	0080065	Seminar I	Anton Ramšak, Denis Arčon	0	90	0	0	0	30	120	4	All-year	no
2.	0080066	Photonics 1	Irena Drevenšek Olenik	45	0	30	0	0	165	240	8	1st semester	no
3.	0080068	Introduction to research work	Boštjan Golob	0	0	0	0	30	60	90	3	1st semester	no
4.	0112218	Electives							510	510	17	1st semester	yes
5.	0078952	Master thesis research 1	Boštjan Golob	0	0	0	0	60	240	300	10	2nd semester	no
6.	0159163	Photonics 2	Irena Drevenšek Olenik	45	0	30	0	0	165	240	8	2nd semester	no
7.	0112220	Electives							300	300	10	2nd semester	yes
Total				90	90	60	0	90	1470	1800	60		

## Year 2

	University Course Code	Course title	Lecturers	Contact hours					Individual student work	Total hours	ECTS	Semesters	Elective
				Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study					
1.	0080069	Seminar 2	Peter Križan	0	45	0	0	0	75	120	4	1st semester	yes
2.	0078955	Solid State Spectroscopy	Janez Dolinšek	30	15	0	0	0	105	150	5	1st semester	no
3.	0112221	Electives							630	630	21	1st semester	yes
4.	0078956	Master thesis research 2	Boštjan Golob	0	0	0	0	120	480	600	20	2nd semester	no
5.	0112222	Electives							300	300	10	2nd semester	yes
Total				30	60	0	0	120	1590	1800	60		

## Computational physics (direction/track)

## Year 1

	University Course Code	Course title	Lecturers	Contact hours					Individual student work	Total hours	ECTS	Semesters	Elective
				Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study					
1.	0079692	Seminar I	Anton Ramšak, Denis Arčon	0	90	0	0	0	30	120	4	All-year	no
2.	0079693	Model analysis 1	Simon Širca	30	0	30	0	0	180	240	8	1st semester	no
3.	0079696	Introduction to research work	Boštjan Golob	0	0	0	0	30	60	90	3	1st semester	no
4.	0112497	Electives							510	510	17	1st semester	yes
5.	0078900	Master thesis research 1	Boštjan Golob	0	0	0	0	60	240	300	10	2nd semester	no
6.	0112500	Electives							540	540	18	2nd semester	yes
Total				30	90	30	0	90	1560	1800	60		

## Year 2

				Contact hours									
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	University Course Code	Course title	Lecturers	Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study	Individual student work	Total hours	ECTS	Semesters	Elective
1.	0079697	Seminar 2	Peter Križan	0	45	0	0	0	75	120	4	1st semester	no
2.	0078899	Advanced computational physics	Tomaž Prosen	45	0	45	0	0	150	240	8	1st semester	no
3.	0112501	Electives							540	540	18	1st semester	yes
4.	0078903	Master thesis research 2	Boštjan Golob	0	0	0	0	120	480	600	20	2nd semester	no
5.	0112502	Electives							300	300	10	2nd semester	yes
		Total		45	45	45	0	120	1545	1800	60		

### Mathematical physics (direction/track)

#### Year 1

				Contact hours									
	University Course Code	Course title	Lecturers	Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study	Individual student work	Total hours	ECTS	Semesters	Elective
1.	0079745	Seminar I	Anton Ramšak, Denis Arčon	0	90	0	0	0	30	120	4	All-year	yes
2.	0078790	Theory of dynamical systems	Tomaž Prosen	45	0	15	0	0	150	210	7	1st semester	no
3.	0079749	Introduction to research work	Boštjan Golob	0	0	0	0	30	60	90	3	1st semester	no
4.	0114098	Electives							540	540	18	1st semester	yes
5.	0078792	Master thesis research 1	Boštjan Golob	0	0	0	0	60	240	300	10	2nd semester	no
6.	0114100	Electives							540	540	18	2nd semester	yes
		Total		45	90	15	0	90	1560	1800	60		

#### Year 2

				Contact hours									
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	University Course Code	Course title	Lecturers	Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study	Individual student work	Total hours	ECTS	Semesters	Elective
1.	0079750	Seminar 2	Peter Križan	0	45	0	0	0	75	120	4	1st semester	no
2.	0078791	Advanced computational physics	Tomaž Prosen	45	0	45	0	0	150	240	8	1st semester	no
3.	0114101	Electives							540	540	18	1st semester	yes
4.	0078795	Master thesis research 2	Boštjan Golob	0	0	0	0	120	480	600	20	2nd semester	no
5.	0114102	Electives							300	300	10	2nd semester	yes
		Total		45	45	45	0	120	1545	1800	60		

Year 1, Year 2, Supplementary electives: Mathematical physics

				Contact hours									
	University Course Code	Course title	Lecturers	Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study	Individual student work	Total hours	ECTS	Semesters	Elective
1.	0110314	Analysis on manifolds	Franc Forstnerič, Janez Mrčun, Pavle Saksida	45	0	30	0	0	105	180	6	1st semester, 2nd semester	yes
2.	0113423	Differential geometry	Janez Mrčun, Pavle Saksida, Sašo Strle	45	0	30	0	0	105	180	6	1st semester, 2nd semester	yes
3.	0113424	Lie groups	Franc Forstnerič, Janez Mrčun, Pavle Saksida	45	0	30	0	0	105	180	6	1st semester, 2nd semester	yes
4.	0113425	Special functions	Janez Mrčun, Miran Černe, Pavle Saksida	30	15	30	0	0	105	180	6	1st semester, 2nd semester	yes
5.	0113426	Introduction to functional analysis	Bojan Magajna, Peter Šemrl, Roman Drnovšek	30	30	0	0	0	90	150	5	1st semester, 2nd semester	yes
		Total		195	45	120	0	0	510	870	29		

## Biophysics (direction/track)

### Year 1

	University Course Code	Course title	Lecturers	Contact hours					Individual student work	Total hours	ECTS	Semesters	Elective
				Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study					
1.	0079800	Seminar I	Anton Ramšak, Denis Arčon	0	90	0	0	0	30	120	4	All-year	no
2.	0079804	Introduction to research work	Boštjan Golob	0	0	0	0	30	60	90	3	1st semester	no
3.	0114385	Biophysics of membranes, cells, and tissues	Primož Zihlerl	45	0	15	0	0	120	180	6	1st semester	no
4.	0114103	Electives							570	570	19	1st semester	yes
5.	0078632	Molecular biophysics	Matej Praprotnik, Primož Zihlerl	40	20	0	0	0	180	240	8	2nd semester	no
6.	0078633	Master thesis research 1	Boštjan Golob	0	0	0	0	60	240	300	10	2nd semester	no
7.	0114105	Electives							300	300	10	2nd semester	yes
		Total		85	110	15	0	90	1500	1800	60		

### Year 2

	University Course Code	Course title	Lecturers	Contact hours					Individual student work	Total hours	ECTS	Semesters	Elective
				Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study					
1.	0079805	Seminar 2	Peter Križan	0	45	0	0	0	75	120	4	1st semester	no
2.	0078631	Experimental methods in biophysics	Natan Osterman	30	0	30	0	0	120	180	6	1st semester	no
3.	0114106	Electives							600	600	20	1st semester	yes
4.	0078636	Master thesis research 2	Boštjan Golob	0	0	0	0	120	480	600	20	2nd semester	no
5.	0114107	Electives							300	300	10	2nd semester	yes
		Total		30	45	30	0	120	1575	1800	60		

## Astrophysics (direction/track)

## Year 1

	University Course Code	Course title	Lecturers	Contact hours					Individual student work	Total hours	ECTS	Semesters	Elective
				Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study					
1.	0079853	Seminar I	Anton Ramšak, Denis Arčon	0	90	0	0	0	30	120	4	All-year	no
2.	0078578	Observational methods in astrophysics	Janez Kos	45	0	30	0	0	165	240	8	1st semester	no
3.	0079857	Introduction to research work	Boštjan Golob	0	0	0	0	30	60	90	3	1st semester	no
4.	0114351	Electives							510	510	17	1st semester	yes
5.	0078580	Master thesis research 1	Boštjan Golob	0	0	0	0	60	240	300	10	2nd semester	no
6.	0114353	Electives							540	540	18	2nd semester	yes
		Total		45	90	30	0	90	1545	1800	60		

## Year 2

	University Course Code	Course title	Lecturers	Contact hours					Individual student work	Total hours	ECTS	Semesters	Elective
				Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study					
1.	0079858	Seminar 2	Peter Križan	0	45	0	0	0	75	120	4	1st semester	no
2.	0114352	Life and Dynamics of Stars	Janez Kos	45	0	30	0	0	165	240	8	1st semester	no
3.	0114354	Electives							540	540	18	1st semester	yes
4.	0078583	Master thesis research 2	Boštjan Golob	0	0	0	0	120	480	600	20	2nd semester	no
5.	0114355	Electives							300	300	10	2nd semester	yes
		Total		45	45	30	0	120	1560	1800	60		

## Meteorology (direction/track)

### Year 1

				Contact hours									
	University Course Code	Course title	Lecturers	Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study	Individual student work	Total hours	ECTS	Semesters	Elective
1.	0549225	Dynamical Meteorology 1*	Gregor Skok	60	0	30	0	0	150	240	8	1st semester	no
2.	0588094	Dynamical Meteorology 2*	Gregor Skok	45	15	30	0	0	150	240	8	2nd semester	no
3.	0548628	Physical meteorology*	Gregor Skok	45	15	30	0	0	120	210	7	1st semester	no
4.	0548629	Atmospheric science seminar*	Gregor Skok	0	15	0	0	0	75	90	3	1st semester	no
5.	0080019	Introduction to research work	Boštjan Golob	0	0	0	0	30	60	90	3	1st semester	no
6.	0114377	Electives							270	270	9	1st semester	yes
7.	0078850	Master thesis research 1	Boštjan Golob	0	0	0	0	60	240	300	10	2nd semester	no
8.	0548635	Electives							360	360	12	2nd semester	yes
Total				150	45	90	0	90	1425	1800	60		

\* Alternative every second year::

*Dinamic meteorology 1, Physical meteorology, Meteorological seminar, Dinamic meteorology 2, Numerila modeling of atmosphere, Weather analysis and prognosis, Physical oceanography, Electoves.*

### Year 1, Year 2, Supplementary Electives Meteorology

				Contact hours									
	University Course Code	Course title	Lecturers	Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study	Individual student work	Total hours	ECTS	Semesters	Elective
1.	0188559	Air pollution	Gregor Skok	30	0	0	0	0	120	150	5	2nd semester	yes
2.	0188560	Practical training in meteorology	Gregor Skok	0	5	0	0	175	0	180	6	2nd semester	yes
3.	0549729	Synoptic meteorology practicum	Gregor Skok	15	0	45	0	0	60	120	4	2nd semester	yes
Total				45	5	45	0	175	180	450	15		

## Year 2

	University Course Code	Course title	Lecturers	Contact hours					Individual student work	Total hours	ECTS	Semesters	Elective
				Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study					
1.	0114378	Model analysis 1	Simon Širca	30	0	30	0	0	180	240	8	1st semester	no
2.	0548639	Atmospheric numerical modelling *	Gregor Skok	30	15	45	0	0	120	210	7	1st semester	no
3.	0588106	Weather analysis and forecasting*	Gregor Skok	45	15	30	0	0	120	210	7	1st semester	no
4.	0548640	Electives							90	90	3	1st semester	yes
5.	0588108	Physical Oceanography*	Vlado Malačič	30	15	30	0	0	75	150	5	1st semester	no
6.	0078854	Master thesis research 2	Boštjan Golob	0	0	0	0	120	480	600	20	2nd semester	no
7.	0114381	Electives							300	300	10	2nd semester	yes
		Total		135	45	135	0	120	1365	1800	60		

\* Alternative every second year::

*Dinamic meteorology 1, Physical meteorology, Meteorological seminar, Dinamic meteorology 2, Numerical modeling of atmosphere, Weather analysis and prognosis, Physical oceanography, Electives.*

Year 1, Electives: Condensed matter physics, Technical physics and photonic, Computational physics, Mathematical physics, Biophysics, Astrophysics, meteorology

	University Course Code	Course title	Lecturers	Contact hours					Individual student work	Total hours	ECTS	Semesters	Elective
				Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study					
1.	0078882	Astrophysics lab	Maruša Bradač	15	0	45	0	0	60	120	4	2nd semester	yes
2.	0078857	Advanced chapters in mathematics for physicists	Janez Mrčun, Pavle Saksida, Sašo Strle	45	0	30	0	0	105	180	6	1st semester	yes

3.	0080026	Experimental Nuclear and particle Physics	Peter Križan	30	0	15	0	0	105	150	5	1st semester, 2nd semester	yes
4.	0078861	Condensed matter physics	Janez Bonča	45	0	30	0	0	165	240	8	1st semester	yes
5.	0078859	Experimental Surface Physics	Dean Cvetko, Igor Muševič	10	0	5	0	30	105	150	5	1st semester	yes
6.	0080031	Experiments in physics 1	Peter Križan	0	0	60	0	0	60	120	4	1st semester	yes
7.	0080053	Experiments in physics 2	Peter Križan	0	0	60	0	0	60	120	4	2nd semester	yes
8.	0159166	Photonics 1	Irena Drevenšek Olenik	45	0	30	0	0	165	240	8	1st semester	yes
9.	0159191	Photonics 2	Irena Drevenšek Olenik	45	0	30	0	0	165	240	8	2nd semester	yes
10.	0078865	Nuclei, quarks, leptons	Peter Križan, Svjetlana Fajfer	45	0	30	0	0	165	240	8	1st semester	yes
11.	0114388	Cosmology	Sašo Grozdanov	30	0	15	0	0	105	150	5	2nd semester	yes
12.	0535831	Quantum field theory	Saša Prelovšek-Komelj	45	0	15	0	0	150	210	7	1st semester	yes
13.	0078777	Methods of experimental condensed matter physics	Janez Dolinšek	30	15	0	0	0	105	150	5	2nd semester	yes
14.	0159194	Model analysis 1	Simon Širca	30	0	30	0	0	180	240	8	1st semester	yes
15.	0080055	Model analysis 2	Simon Širca	30	0	45	0	0	165	240	8	1st semester, 2nd semester	yes
16.	0078888	Molecular biophysics	Matej Praprotnik, Primož Ziherl	40	20	0	0	0	180	240	8	2nd semester	yes
17.	0078760	Advanced particle detectors and data analysis	Boštjan Golob, Peter Križan	30	0	15	0	0	105	150	5	1st semester	yes

18.	0078870	Observational methods in astrophysics	Janez Kos	45	0	30	0	0	165	240	8	1st semester	yes
19.	0080060	General Theory of Relativity	Sašo Grozdanov	45	0	15	0	0	150	210	7	1st semester, 2nd semester	yes
20.	0078876	Theory of dynamical systems	Tomaž Prosen	45	0	15	0	0	150	210	7	1st semester	yes
21.	0078893	Solid state theory	Janez Bonča	45	15	0	0	0	150	210	7	2nd semester	yes
22.	0080046	The use of microprocessors	Dušan Ponikvar	30	0	30	0	0	90	150	5	1st semester, 2nd semester	yes
23.	0080047	Advanced quantum mechanics	Anton Ramšak, Tomaž Prosen	45	0	30	0	0	135	210	7	1st semester	yes
24.	0159167	Cosmology and particles in the early universe	Borut Bajc, Miha Nemevšek, Sašo Grozdanov	45	15	15	0	0	135	210	7	1st semester, 2nd semester	yes
25.	0588135	Dynamical Meteorology 2	Gregor Skok	45	15	30	0	0	150	240	8	2nd semester	yes
26.	0078966	Physical meteorology	Gregor Skok	45	15	30	0	0	120	210	7	1st semester	yes
27.	0588138	Weather analysis and forecasting	Gregor Skok	45	15	30	0	0	120	210	7	1st semester	yes
28.	0588139	Physical Oceanography	Vlado Malačič	30	15	30	0	0	75	150	5	1st semester	yes
29.	0549226	Dynamical Meteorology 1	Gregor Skok	60	0	30	0	0	150	240	8	1st semester	yes
30.	0078626	Numerično modeliranje atmosfere	Gregor Skok	30	15	45	0	0	120	210	7	1st semester	yes
31.	0114395	Symmetry in physics	Jernej Fesl Kamenik, Primož Zihlerl	30	0	15	0	0	165	210	7	1st semester, 2nd semester	yes
Total				1100	140	800	0	30	4020	6090	203		

Students of Technical physics and Photonics can select subject optics from academic Bachelor study programme Physics.

Students of different tracks/orientations of this study programme can select electives from academic Bachelor study programme dependent on the decision of the study commission of the faculty.

Year 2, Electives, Condensed matter physics, Technical physics and photonic, Computational physics, Mathematical physics, Biophysics, Astrophysics, meteorology

	University Course Code	Course title	Lecturers	Contact hours					Individual student work	Total hours	ECTS	Semesters	Elective
				Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study					
1.	0114383	Life and Dynamics of Stars	Janez Kos	45	0	30	0	0	165	240	8	1st semester	yes
2.	0078744	Atomic Physics	Andrej Mihelič, Dean Cvetko, Matjaž Žitnik	30	0	15	0	0	105	150	5	1st semester	yes
3.	0114385	Biophysics of membranes, cells, and tissues	Primož Zihelr	45	0	15	0	0	120	180	6	1st semester	no
4.	0080026	Experimental Nuclear and particle Physics	Peter Križan	30	0	15	0	0	105	150	5	1st semester, 2nd semester	yes
5.	0078749	Experimental methods in biophysics	Natan Osterman	30	0	30	0	0	120	180	6	1st semester	yes
6.	0078750	Soft matter physics	Primož Zihelr	45	15	15	0	0	165	240	8	1st semester	yes
7.	0080031	Experiments in physics 1	Peter Križan	0	0	60	0	0	60	120	4	1st semester	yes
8.	0080053	Experiments in physics 2	Peter Križan	0	0	60	0	0	60	120	4	2nd semester	yes
9.	0114388	Cosmology	Sašo Grozdanov	30	0	15	0	0	105	150	5	2nd semester	yes



10.	0159167	Cosmology and particles in the early universe	Borut Bajc, Miha Nemevšek, Sašo Grozdanov	45	15	15	0	0	135	210	7	1st semester, 2nd semester	yes
11.	0078756	Quantum Optics	Rainer Oliver Kaltenbaek	30	0	15	0	0	105	150	5	1st semester	yes
12.	0080055	Model analysis 2	Simon Širca	30	0	45	0	0	165	240	8	1st semester, 2nd semester	yes
13.	0078777	Methods of experimental condensed matter physics	Janez Dolinšek	30	15	0	0	0	105	150	5	2nd semester	yes
14.	0078780	Nanophysics	Anton Ramšak	30	0	15	0	0	105	150	5	2nd semester	yes
15.	0078762	Optic spectroscopy	Irena Drevenšek Olenik	30	0	15	0	0	105	150	5	1st semester	yes
16.	0078627	Simplektna geometrija in intergrabilnost	Pavle Saksida	30	0	15	0	0	105	150	5	1st semester	yes
17.	0078895	Solid State Spectroscopy	Janez Dolinšek	30	15	0	0	0	105	150	5	1st semester	yes
18.	0112196	Statistical physics	Anton Ramšak, Marko Žnidarič	45	0	30	0	0	165	240	8	1st semester	yes
19.	0078765	Light in nature	Tomaž Zwitter	15	0	15	0	0	60	90	3	1st semester	yes
20.	0078788	Theory of elementary particles and nuclei	Svjetlana Fajfer	45	15	0	0	0	150	210	7	1st semester	yes
21.	0112198	Gauge field theory	Svjetlana Fajfer	30	15	0	0	0	165	210	7	2nd semester	yes
22.	0078770	Advanced computational physics	Tomaž Prosen	45	0	45	0	0	150	240	8	1st semester	yes

23.	0080060	General Theory of Relativity	Sašo Grozdanov	45	0	15	0	0	150	210	7	1st semester, 2nd semester	yes
24.	0078626	Numerično modeliranje atmosfere	Gregor Skok	30	15	45	0	0	120	210	7	1st semester	yes
25.	0544097	Laboratory of Machine Learning Methods in Physics	Borut Paul Kerševan, Jernej Fesl Kamenik	30	0	45	0	0	105	180	6	1st semester	yes
26.	0549226	Dynamical Meteorology 1	Gregor Skok	60	0	30	0	0	150	240	8	1st semester	yes
27.	0588135	Dynamical Meteorology 2	Gregor Skok	45	15	30	0	0	150	240	8	2nd semester	yes
28.	0078966	Physical meteorology	Gregor Skok	45	15	30	0	0	120	210	7	1st semester	yes
29.	0588138	Weather analysis and forecasting	Gregor Skok	45	15	30	0	0	120	210	7	1st semester	yes
30.	0588139	Physical Oceanography	Vlado Malačič	30	15	30	0	0	75	150	5	1st semester	yes
Total				1020	165	720	0	0	3615	5520	184		

Students must contact the faculty for instruction to select electives.