Note:

The following curriculum is a consolidated version. It is legally non-binding and for informational purposes only.

The legally binding versions are found in the University of Innsbruck Bulletins (in German).

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Complete version from 1 October 2014

Curriculum for the
Bachelor's Programme Physics
at the Faculty of Mathematics, Computer Science and Physics
of the University of Innsbruck

§ 1 Profile

The Bachelor's Programme Physics prepares for the Master's Programme Physics and conveys skills and knowledge for physics-related technical professions. The main goal of the study programme is a solid basic understanding of central physical theories and an introduction to use apparatus, software components and working techniques of a physical laboratory. The ability to independently deal with physical skills and competences is to be proved by a bachelor's thesis.

Typical fields of activities for graduates, in addition to university-related research, include the implementation and support of research and development projects in physics and technology related industries and service sectors. Physicists find attractive employment opportunities in areas such as measurement and medical technology, information and telecommunications companies, as well as consulting firms and the financial sector.

Graduates should be able to use their knowledge to solve problems in science, technology, medicine and business. In-depth introduction to physical concepts and analytical thinking enables graduates to analyse and structure technical issues and to develop solution strategies. Well-balanced fundamental and research-oriented teaching promotes creative thinking and makes knowledge-based decisions possible.

§ 2 Allocation

The Bachelor's Programme Physics is grouped among the natural sciences.

§ 3 Scope and duration

The Bachelor's Programme Physics covers 180 ECTS-Credits, with a duration of six semesters. Compulsory modules, amounting to 155 ECTC-Credits and elective modules, amounting to 25 ECTS-Credits, are to be taken.

§ 4 Courses and numbers of participants

(1) Courses without continuing performance assessment:

1. **Lectures** (VO) are courses held in lecture format. They introduce the research areas, methods and schools of thought for a given subject.
2. **Orientation courses** (SL) aim to provide the students with an outline of essential elements of the programme and its subsequent courses of study; they also aim to provide students with a solid basis on which to make personal decisions concerning their choice of study program. Maximum number of participants: 25

(2) Courses with continuing performance assessment are:

1. **Introductory seminars** (PS) introduce students interactively to scientific literature through the treatment of selected issues. They convey knowledge and methods of academic work. Maximum number of participants: 25
2. **Seminars** (SE) provide in-depth treatment of scientific topics through students' presentations and discussion thereof. Maximum number of participants: 15
3. **Practical training courses** (PR) provide practical experience with concrete scientific tasks, complementing occupational and academic training. Maximum number of participants: 25

§ 5 Compulsory and elective modules

(1) The following compulsory modules with a total of 155 ECTS-Credits are to be taken:

1.	**Compulsory Module: Preparatory Course in Mathematics**	**h**	**ECTS-Credits**
a.	**VO Preparatory Course in Mathematics** Introduction into the fundaments of pre-calculus; vector algebra; differential calculus; scalar and vector fields; basics of vector analysis; simple differential equation; complex numbers; Taylor expansion	1	1
b.	**PS Preparatory Course in Mathematics** Discussion, enhancement and practice of the contents presented in the lecture	1	1.5
	Total	**2**	**2.5**
	Learning objectives: Students are able to describe and explain the fundamentals of precalculus. They are able to apply their knowledge to solve mathematical issues.		
	Prerequisites: none		

2.	Compulsory Module: Linear Algebra	h	ECTS-Credits
a.	**VO Linear Algebra** Matrix algebra; systems of linear equitation; vector spaces, vector spaces with scalar product (introduction into Euclidian geometry); calculation with functions; eigenvalue problems.	3	4.5
b.	**PS Linear Algebra** Discussion, enhancement and practice of the contents presented in the lecture; practice in scientific argumentation and presentation of mathematical contents.	2	2.5
c.	**PR Linear Algebra** Practical exercise of the contents presented in the lecture.	1	0.5
	Total	**6**	**7.5**
	Learning objectives: Students know the general concept of linear algebra and can use it for solving problems in this field. They are able to individually elaborate similar contents and can chose suitable methods of linear algebra in order to apply them to solve problems in the field of physics.		
	Prerequisites: none		

3.	Compulsory Module: Analysis I	h	ECTS-Credits
a.	**VO Analysis I** Introduction into the analysis; necessary basic concepts of mathematics; real numbers; functions; differential and integral calculus in a variable.	3	4.5
b.	**PS Analysis I** Discussion, enhancement and practice of the contents presented in the lecture; practice in scientific argumentation and presentation of mathematical contents.	2	2.5
c.	**PR Analysis I** Practical exercise of the contents presented in the lecture.	1	0.5
	Total	**6**	**7.5**
	Learning objectives: Students know the general concept of analysis and can use it for solving problems in this field. They are able to individually elaborate similar contents and can chose suitable methods of differential and integral calculus in a variable in order to apply them to solve problems in the field of physics.		
	Prerequisites: none		

4.	Compulsory Module: Programming for Physicists	h	ECTS-Credits
	VO Programming for Physicists Practical programming in the programming language C	2	2.5
	Total	**2**	**2.5**
	Learning objectives: Students know how to explain the basics of programming. They are able to apply their knowledge to solve problems in the field of physics.		
	Prerequisites: none		

5.	Compulsory Module: Introduction to Physics	h	ECTS-Credits
	VO Introduction to Physics Basic concepts and overview in different subjects of physics; current issues and results of physics.	1	2.5
	Total	**1**	**2.5**
	Learning objectives: Students know how to explain the basic concepts and ways of thinking in physics. They are able to independently elaborate similar contents and apply their knowledge for solving problems.		
	Prerequisites: none		

6.	Compulsory Module: Physics Ia: Mechanics	h	ECTS-Credits
a.	**VO Physics Ia: Mechanics** Mechanics of mass bodies and rigid bodies; vibrations.	2	3
b.	**SL Physics Ia: Mechanics** Discussion, enhancement and practice of the contents presented in the lecture; practice in scientific argumentation and presentation of mathematical contents; independent work with selected examples from the subject area.	1	2
	Total	**3**	**5**
	Learning objectives: Students are able to explain the basics and corresponding concepts of mechanics. They are able to independently elaborate similar contents and apply their knowledge for solving problems in the field of mechanics.		
	Prerequisites: none		

7.	Compulsory Module: Physics Ib: Mechanics and Thermodynamics	h	ECTS-Credits
a.	**VO Physics Ib: Mechanics and Thermodynamics** Waves; deformable bodies and liquids; thermodynamics; basic elements of statistical mechanics.	2	3
b.	**PS Physics Ib: Mechanics and Thermodynamics** Discussion, enhancement and practice of the contents presented in the lecture; practice in scientific argumentation and presentation of physical contents; independent work with selected examples from the subject area.	1	2
	Total	**3**	**5**
	Learning objectives: Students are able to explain the basics of classical physics (mechanics and thermodynamics) and corresponding concepts. They are able to independently elaborate similar contents and apply their knowledge for solving problems in the field of mechanics and thermodynamics.		
	Prerequisites: none		

8.	Compulsory Module: Physics II: Electromagnetism and Optics	h	ECTS-Credits
a.	**VO Physics II: Electromagnetism and Optics** Maxwell equations with applications in electrostatics, magneto-statics and electrodynamics; wave expansion and interference; diffraction grid and interferometer; optics in isotropic and anisotropic media; (laser)ray expansion.	5	7
b.	**PS Physics II: Electromagnetism and Optics** Discussion, enhancement and practice of the contents presented in the lecture; practice in scientific argumentation and presentation of physical contents; independent work with selected examples from the subject area.	2	3
	Total	**7**	**10**
	Learning objectives: Students are able to explain the basics of electromagnetism and optics and corresponding concepts. They are able to transfer their knowledge and to solve problems in the field of electromagnetism and optics.		
	Prerequisites: none		

9.	Compulsory Module: Physics III: Quantum and Atom Physics	h	ECTS-Credits
a.	**VO Physics III: Quantum and Atom Physics** Wave functions, Schrödinger equation, Heisenberg's uncertainty relationship, hydrogen atom, electron spin, atomic fine and hyperfine structure, Zeeman effect, optical transitions and selection rules, crystal lattice, electrons in the solid body, band theory, metals, doping, semiconductor	4	4.5
b.	**PS Physics III: Quantum and Atom Physics** Discussion, enhancement and practice of the contents presented in the lecture; practice in scientific argumentation and presentation of physical contents.	2	3
	Total	**6**	**7.5**
	Learning objectives: Students are able to explain the basics of electromagnetism and optics and corresponding concepts. They are able to transfer their knowledge and to solve problems in the field of electromagnetism and optics.		
	Prerequisites: none		

10.	Compulsory Module: Physics Laboratory 1	h	ECTS-Credits
	PR Physics Laboratory I Experiments in: energy and impulse, moment of inertia, vibrations and waves, resonances, elasticity, surface tension, electrical circuits, polarisation of light, gas laws.	4	7.5
	Total	**4**	**7.5**
	Learning objectives: Students are able to demonstrate experimentally oriented working of physics and they are able to independently elaborate basic experiments of classical physics in the fields of mechanics and thermodynamics, electromagnetism and optics. They have the skills to work successfully, structured and reliable in a team		
	Prerequisites: successful completion of the compulsory modules Introduction into Physics, Physics Ib (Mechanics and Thermodynamics) and Physics II (Electromagnetism and Optics)		

11.	Compulsory Module: Physics IV: Nuclears and Particles	h	ECTS-Credits
a.	**VO Physics IV: Nuclears and Particles** Characteristics of stable nuclei, core collapse and radioactivity, scattering processes, nuclear powers, nuclear reactions, particle systematics, relativistic kinematics, invariant mass, interactions, accelerators, detectors	4	4.5
b.	**PS Physics IV: Nuclears and Particles** Discussion, enhancement and practice of the contents presented in the lecture; practice in scientific argumentation and presentation of physical contents.	2	3
	Total	**6**	**7.5**

	Learning objectives: Students are able to explain the basics of nuclear and particle physics and they are able to independently elaborate similar contents. They know how to generalize the fundamentals of nuclear and particle physics and to apply them for solving problems.
	Prerequisites: none

12.	**Compulsory Module: Physics Laboratory 2**	**h**	**ECTS-Credits**
	PR Physics Laboratory 2 Experiments in: charge of an electron, radioactivity, interferometry, microscope, semiconductor devices, heat capacity, black body, high frequency wave guide, laser diodes	4	7.5
	Total	**4**	**7.5**
	Learning objectives: Students are able to demonstrate experimentally oriented working of physics and they are able to independently elaborate basic experiments of modern physics. They have the skills to work successfully, structured and reliable in a team		
	Prerequisites: successful completion of the compulsory modules Physics Laboratory 1		

13.	**Compulsory Module: Advanced Laboratory**	**h**	**ECTS-Credits**
	PR Advanced Laboratory Experiments in connection to the research focus of physics, i.e. from the partial areas laser optics, precision spectroscopy, ion physics, solid body physics, particle and astro physics	4	7.5
	Total	**4**	**7.5**
	Learning objectives: Students are able to demonstrate experimentally oriented working of advanced physics in connection to its research focus and they are able to independently elaborate advanced experiments of modern physics. They have the skills to work successfully and communicate in a team		
	Prerequisites: successful completion of the compulsory modules Physics Laboratory 2, the module Physics III (Quantum and Atom Physics) and at least one course of the module Physics IV (Nuclear and Particle Physics)		

14.	**Compulsory Module: Theoretical Physics 1**	**h**	**ECTS-Credits**
a.	**VO Theoretical Physics 1 (Mechanics)** Analytical mechanics of non-relativistic mass points (Lagrange, Hamilton), solid bodies, elements of continuum mechanics; relativistic point mechanics	4	6
b.	**PS Theoretical Physics 1 (Mechanics)** Discussion, enhancement and practice of the contents presented in the lecture; practice in scientific argumentation and presentation of physical contents.	2	4
	Total	**6**	**10**

	Learning objectives: Students are able to explain mechanics as basics of theoretical physics and they are able to independently elaborate similar contents. They know how to generalize the basics of theoretical mechanics and to apply for solving problems.
	Prerequisites: none

15.	**Compulsory Module: Theoretical Physics 2**	**h**	**ECTS-Credits**
a.	**VO Theoretical Physics 2 (Quantum Theory)** Conceptual basics; Hilbert space formalism of quantum theory; spectra of Schrödinger operators; momentum; symmetries; identical particles; perturbation theory	4	6
b.	**PS Theoretical Physics 2 (Quantum Theory)** Discussion, enhancement and practice of the contents presented in the lecture; practice in scientific argumentation and presentation of physical contents.	2	4
	Total	**6**	**10**
	Learning objectives: Students are able to explain quantum theory as basics of theoretical physics and they are able to independently elaborate similar contents. They know how to generalize the basics of theoretical quantum theory and to apply for solving problems.		
	Prerequisites: none		

16.	**Compulsory Module: Theoretical Physics 3**	**h**	**ECTS-Credits**
a.	**VO Theoretical Physics 3 (Electrodynamics)** Maxwell equation in the vacuum; boundary value problems of electro and magneto-statics; electrodynamics in the media; radiation of moving point charges; covariant formulation of electrodynamics.	4	6
b.	**PS Theoretical Physics 3 (Electrodynamics)** Discussion, enhancement and practice of the contents presented in the lecture; practice in scientific argumentation and presentation of physical contents.	2	4
	Total	**6**	**10**
	Learning objectives: Students are able to explain electrodynamics as basics of theoretical physics and they are able to independently elaborate similar contents. They know how to generalize the basics of theoretical electrodynamics and to apply for solving problems.		
	Prerequisites: none		

17.	Compulsory Module: Theoretical Physics 4	h	ECTS-Credits
a.	**VO Theoretical Physics 4 (Statistical Physics)** Derivation of thermodynamics from the equilibrium states of classical and quantum mechanical many-particle systems; quantization of continuum models	4	6
b.	**PS Theoretical Physics 4 (Statistical Physics)** Discussion, enhancement and practice of the contents presented in the lecture; practice in scientific argumentation and presentation of physical contents.	2	4
	Total	**6**	**10**
	Learning objectives: Students are able to explain statistical physics as basics of theoretical physics and they are able to independently elaborate similar contents. They know how to generalize the basics of theoretical statistical physics and to apply for solving problems.		
	Prerequisites: none		

18.	Compulsory Module:	h	ECTS-Credits
a.	**VO Analysis 2** Differentiation and integral equation in several variables, including topological fundamentals in R^n, curves and surfaces in R^3 as well as integral theorems	4	6
b.	**PS Analysis 2** Discussion, enhancement and practice of the contents presented in the lecture; practice in scientific argumentation and presentation of physical contents.	2	4
	Total	**6**	**10**
	Learning objectives: Students know the basics of differential and integral calculus and equation and can use them, including topological basics, to solve problems of analysis. They are able to independently elaborate similar contents. They know how to select suitable methods of analysis in several variables and to apply for solving problems.		
	Prerequisites: none		

19.	Compulsory Module: Mathematical Methods of Physics 1	h	ECTS-Credits
a.	**VO Mathematical Methods of Physics 1** Probability calculation, common differential equations, Fourier series and Fourier integrals and vector analysis in linear spaces	3	4.5
b.	**PS Mathematical Methods of Physics 1** Discussion, enhancement and practice of the contents presented in the lecture; practice in scientific argumentation and presentation of mathematical contents.	2	3
	Total	**5**	**7.5**

	Learning objectives: Students are able to explain and apply simple mathematical methods of physics. In particular, they know how to apply methods and probability calculus, common differential equations, Fourier series and integrals and the vector analysis in linear spaces in terms of problems in the field of physics and to independently elaborate similar contents.
	Prerequisites: none

20.	**Compulsory Module: Mathematical Methods of Physics 2**	**h**	**ECTS-Credits**
a.	**VO Mathematical Methods of Physics 2** Analytical functions; solving of (inhomogeneous) linear partial differential equations of electrodynamics and quantum mechanics; distributions	3	4.5
b.	**PS Mathematical Methods of Physics 2** Discussion, enhancement and practice of the contents presented in the lecture; practice in scientific argumentation and presentation of mathematical contents.	2	3
	Total	**5**	**7.5**
	Learning objectives: Students are able to explain and apply advanced mathematical methods of physics. In particular, they know how to apply physically motivated (inhomogeneous) linear partial differential equations, analytical functions and distributions in terms of problems in the field of physics and to independently elaborate similar contents.		
	Prerequisites: none		

21.	**Compulsory Module: Seminar with Bachelor's Thesis**	**h**	**ECTS-Credits**
	SE Seminar with Bachelor's Thesis Introduction into the methods of scientific work; advanced treatment in the form of a seminar and a bachelor thesis with a physical issue	2	10
	Total	**2**	**10**
	Learning objectives: Students are able to demonstrate a professional and methodically correct approach to a partial area of physics and to illustrate it written and oral in a well-structured form. They know how to impart information, ideas, problems and solutions to experts lay people. They have developed learning strategies to continue their studies result-oriented in the time scope given with a high degree of autonomy. They have knowledge in a partial area of physics in an extent which offers them the possibility to develop and apply creative and innovative ideas.		
	Prerequisites: successful completion of courses with a total of 105 ECTS-Credits from the compulsory modules.		

(2) The following elective modules with a total of 25 ECTS-Credits are to be taken:

1.	**Elective Module: Astrophysics 1**	**h**	**ECTS-Credits**
a.	**VO Astrophysics 1** Methods and devices, units and scales, stellar structure, stellar development paths, instellar matter, galaxies and galaxy construction, galaxy cluster, Hubble stream, cosmology, big bang	3	3
b.	**PS Astrophysics 1** Discussion, enhancement and practice of the contents presented in the lecture; practice in scientific argumentation and presentation of mathematical contents.	1	2
	Total	**4**	**5**
	Learning objectives: Students are able to explain the fundamentals of astrophysics and they are able to independently elaborate similar contents. They know how to generalize the basics of astrophysics and to apply for solving problems.		
	Prerequisites: none		

2.	**Elective Module: Atomic and Molecule Physics**	**h**	**ECTS-Credits**
a.	**VO Atomic and Molecule Physics** Multiple electron atoms, structure of atoms, high-resolution spectroscopy, molecule states, molecule rotation and vibration, symmetries, molecule spectres	3	3
b.	**PS Atomic and Molecule Physics** Discussion, enhancement and practice of the contents presented in the lecture; practice in scientific argumentation and presentation of physical contents.	1	2
	Total	**4**	**5**
	Learning objectives: Students are able to explain the fundamentals of Atomic Physics and Molecular Physics and they are able to independently elaborate similar contents. They know how to generalize the basics of Atomic Physics and Molecular Physics and to apply for solving problems.		
	Prerequisites: none		

3.	Elective Module: Solid State Physics	h	ECTS-Credits
a.	**VO Solid State Physics** Phonons, magnetism, supraconductivity	3	3
b.	**PS Solid State Physics** Discussion, enhancement and practice of the contents presented in the lecture; practice in scientific argumentation and presentation of physical contents.	1	2
	Total	**4**	**5**
	Learning objectives: Students are able to explain the fundamentals of solid body physics and they are able to independently elaborate similar contents. They know how to generalize the basics of solid body physics and to apply for solving problems.		
	Prerequisites: none		

4.	Elective Module: Interdisciplinary Skills I	h	ECTS-Credits
	Course with a total of up to 5 ECTS-Credits from the course offer at the Faculty of Biology, Chemistry and Pharmacy, Geo- and Atmospheric Sciences, Mathematics, Computer Sciences and Physics and Engineering Science set up at University of Innsbruck, but not at the same time courses of the Bachelor's Programme Physics, can be chosen freely. It is recommended to attend teaching units on the topic of the gender aspects of mathematics, informatics and physics.	-	5
	Total	**-**	**5**
	Learning objectives: Students are able to explain interdisciplinary fundamentals from the fields of engineering sciences, biology, chemistry and pharmacy, geo- and atmospheric sciences, interdisciplinary basics of gender aspects, advanced basics from one or several partial areas of physics, mathematics or computer sciences, beyond the courses of the Bachelor's Programme Physics or interdisciplinary basics of gender aspects, and their corresponding concepts.		
	Prerequisites: none		

5.	Elective Module: Interdisciplinary Skills II	h	ECTS-Credits
	Course with a total of up to 5 ECTS-Credits from the course offer at the Faculty of Biology, Chemistry and Pharmacy, Geo- and Atmospheric Sciences, Mathematics, Computer Sciences and Physics and Engineering Science set up at University of Innsbruck, but not at the same time courses of the Bachelor's Programme Physics, can be chosen freely. It is recommended to attend teaching units on the topic of the gender aspects of mathematics, informatics and physics.	-	5
	Total	**-**	**5**
	Learning objectives: Students are able to explain interdisciplinary fundamentals from the fields of engineering sciences, biology, chemistry and pharmacy, geo- and atmospheric sciences, interdisciplinary basics of gender aspects, advanced basics from one or several partial areas of physics, mathematics or computer sciences, beyond the courses of the Bachelor's Programme Physics or interdisciplinary basics of gender aspects, and their corresponding concepts.		
	Prerequisites: none		

6. Modules from the curricula of the bachelor's programmes at the Faculty of Biology, Chemistry and Pharmacy, Geo- and Atmospheric Sciences, Mathematics, Computer Sciences and Physics and Engineering Sciences at the University of Innsbruck with a total of 5 ECTS-Credits can be selected freely in order to focus the choice of specialization. The prerequisites of the respective curricula do apply.

§ 6 Studies Induction and Orientation Stage

(1) The Studies Induction and Orientation Stage covers one semester (30 ECTS-Credits) and offers students an overview of the main contents of the degree programme and its structure in order to provide a factual basis to assess the decision to pursue the chosen field.

(2) The Studies Induction and Orientation Stage requires the following course examinations, which may be repeated twice, to be completed successfully:

Module 6 (5 ECTS-Credits):

1. Compulsory module Physics Ia: Mechanics (VO2, 2h)
2. Compulsory module Physics Ia: Mechanics (SL1, 1h)

(3) Passing the examinations specified in paragraph 2 permits students to attend all further courses and take all examinations following the Studies Induction and Orientation Stage and to write a bachelor's thesis as described in the curriculum. Registration requirements specified by the curriculum are to be followed.

§ 7 Bachelor's Thesis

A bachelor's thesis is to be completed, which is to be presented within the module "Seminar with Bachelor Thesis" The bachelor's thesis is to be submitted in paper form and in digital version. The form of the submission of the digital version is to be determined by the Director of Studies.

§ 8 Allocation of places in courses with a limited number of participants

In courses with a limited number of participants, course places are allocated as follows:

1. Students for whom the study duration would be extended due to the postponement are to be given priority.
2. If the criteria in No 1 do not suffice, first, students for whom this course is part of a compulsory module are to be given priority, and second, students for whom this course is part of an elective module.
3. If the criteria in No 1 and 2 do not suffice, the available places are drawn by random.

§ 9 Examination Regulations

(1) The performance of the modules is assessed by module examinations. Module examinations are the exams which serve to proof the knowledge and skills in a module. With a positive evaluation of all parts of a module examination, the corresponding module is successfully completed.

(2) The performance of the courses of the modules is assessed by course examinations, which are

1. Examinations that assess the knowledge and skills covered in one course in which course assessment is based on a single examination at the end of the course. The course instructor has to define the method of examination (written and/or oral) and the assessment criteria before the course begins.
2. Courses with continuous assessment, for which course assessment is based on regular written and/or oral contribution by participants. The course instructor has to define the assessment criteria before the course begins.

§ 10 Academic degree

Graduates of the Bachelor's Programme Physics are awarded the academic degree "Bachelor of Science", abbreviated "BSc".

§ 11 Validity and Effect

(1) The curriculum is effective as of 1 October 2007.

(2) Modification of the curriculum published in the University of Innsbruck Bulletin of 23 June 2010, Issue 42, No 332 is effective as of 1 October 2010 and applies to all students.

(3) §§ 4 and § 5 in the version published in the University of Innsbruck Bulletin of 16 June 2011, Issue 31, No 483 is effective as of 1 October 2011 and applies to all students.

(4) § 6 (Studies Induction and Orientation Stage) in the version published in the University of Innsbruck Bulletin of 16 June 2011, Issue 31, No 483 is effective as of 1 October 2011 and applies to all students beginning their degree programme as of winter semester 2011/2012.

(5) § 6 (Studies Induction and Orientation Stage) in the version published in the University of Innsbruck Bulletin of 16 June 2011, Issue 31, No 483 ceases to be effective at the end of 30 September 2014.

(6) Modification of the curriculum published in the University of Innsbruck Bulletin of 02 June 2014, Issue 24, No 397 is effective as of 1 October 2014 and applies to all students.

(7) § 11 section 5 ceases to be effective as of 30 September 2014.

(8) § 6 ceases to be effective as of 31 December 2015.

§ 12 Transitory Provisions

(1) Regular students who have commenced the Diploma Programme Physics at the University of Innsbruck before 1 October 2007 are entitled from this point in time onwards to complete the first section of this programme within a maximum of three semesters, the second section within a maximum of five semesters, and the third section within a maximum of five semesters.

(2) If one section of the diploma programme is not completed within the specified time then this curriculum of the bachelor's programme will apply.

(3) Students of the Diploma Programme Physics are entitled to change to this curriculum of the bachelor's programme at any time on a voluntary basis.

(4) The recognition of exams according to § 78 Para. 1 University Organisation Act 2002 is set out in appendix 1 of this curriculum.

(5) The course examinations according to the curriculum for the Bachelor's Programme Physics in the version of the University of Innsbruck Bulletin from 23 April 2007, issue 31, no. 195, correspond to the respective course examinations of the curriculum in the version of the University of Innsbruck Bulletin from 23 June 2010, issue 42, no. 332, as follows:

Curriculum 2007	**Curriculum 2010**
Mechanics and Thermodynamics, VO2 Electromagnetism and Optics, VO 3	Physics 1, VO5
Mechanics and Thermodynamics, PS 2 Electromagnetism and Optics, PS 2	Physics 1, PS 4

(6) The course examinations according to the curriculum for the Bachelor's Programme Physics in the version of the University of Innsbruck Bulletin from 23 June 2010, issue 42, no. 332, correspond to the respective course examinations of the curriculum in the version of the University of Innsbruck Bulletin from 16 June 2011, issue 31, No. 483, as follows:

Exams successfully completed:	**Recognised as:**
Introduction to Physics (VO5; 7.5 ECTS)	Introduction to Physics (VO1; 2.5 ECTS) Physics Ia: Mechanics (VO2+SL1; 5 ECTS)
Physics 1 (VO5; 6.5 ECTS)	Physics Ia: Mechanics (VO2; 3 ECTS) Physics Ib: Mechanics and Thermodynamics (VO2; 3 ECTS) Physics II: Electromagnetism and Optics (VO5; 7 ECTS)
Physics 1 (PS4; 6 ECTS)	Physics Ia: Mechanics (SL1; 2 ECTS) Physics Ib: Mechanics and Thermodynamics (PS1; 2 ECTS) Physics II: Electromagnetism and Optics (PS2; 3 ECTS)
Physics 2 (VO4; 4.5 ECTS)	Physics III: Atom-, Quantum- and Solid State Physics (VO4; 4.5 ECTS)
Physics 2 (PS2; 3 ECTS)	Physics III: Atom-, Quantum- and Solid State Physics (PS2; 3 ECTS)
Physics 3(VO4; 4.5 ECTS)	Physics IV: Nuclears and Particles (VO4; 4.5 ECTS)
Physics 3 (PS2; 3 ECTS)	Physics IV: Nuclears and Particles (PS2; 3 ECTS)
Mechanics and Thermodynamics (VO2; 2 ECTS)	Physics Ia: Mechanics (VO2; 3 ECTS) Physics Ib: Mechanics and Thermodynamics (VO2; 3 ECTS)

Mechanics and Thermodynamics (PS2; 3 ECTS)	Physics Ia: Mechanics (SL1; 2 ECTS) Physics Ib: Mechanics and Thermodynamics (PS1; 2 ECTS)
Electromagnetism and Optics (VO3; 4.5 ECTS)	Physics II: Electromagnetism and Optics (VO5; 7 ECTS)
Electromagnetism and Optics (PS2; 3 ECTS)	Physics II: Electromagnetism and Optics (PS2; 3 ECTS)
Introduction to Mathematics 1 (VO3; 4.5 ECTS)	Linear Algebra (VO3; 4.5 ECTS)
	Preparatory Course in Mathematics (VO1; 1 ECTS)
Introduction to Mathematics 1 (PS2; 2.5 ECTS)	Linear Algebra (PS2; 2.5 ECTS) Preparatory Course in Mathematics (PS1; 1.5 ECTS)
Introduction to Mathematics 1 (PR1; 0.5 ECTS)	Linear Algebra (PR1; 0.5 ECTS)
Introduction to Mathematics 2 (VO3; 4.5 ECTS)	Analysis 1 (VO3; 4.5 ECTS)
Introduction to Mathematics 2 (PS2; 2.5 ECTS)	Analysis 1 (PS2; 2.5 ECTS)
Introduction to Mathematics 2 (PR1; 0.5 ECTS)	Analysis 1 (PR1; 0.5 ECTS)
Introduction to Mathematics (VO3; 4.5 ECTS	5 ECTS-Credits from elective module (module 24)
Introduction to Mathematics (PS2; 3 ECTS)	Programming for Physicists (PR2; 2.5 ECTS) and 2.5 ECTS-Credits from elective module (module 24)

Appendix 1: Recognition of Exams

The following positively assessed exams, taken as part of the Diploma Programme in Physics, the Teacher Training Programme with Diploma Thesis - Subject Physics or of another study programme at the University of Innsbruck will be recognised as equal towards the Bachelor's Programme in Physics at the University of Innsbruck according to § 78 Par. 1 University Organisation Act 2002 as follows:

Exams successfully completed:		**Recognised as:**	
Physics 1 & Physics 2	VO4+PS2 VO4+PS2	Introduction to Physics & Physics 1	VO5 VO2+PS2, VO3+PS2
Physics 3	VO4	Physics 2	VO4
Physics 3	PS2	Physics 2	PS2
Physics 4	VO4	Physics 3	VO4
Physics 4	PS2	Physics 3	PS2
Mathematics for Physicists 1	VO3	Introduction to Mathematics 1	VO3
Mathematics for Physicists 2	VO3	Introduction to Mathematics 2	VO3
Mathematics for Physicists 1+2	PS4	Introduction to Mathematics 1+2	PS2+PS2+PR1+PR1
Mathematics for Physicists 3 & Introduction to mathematics for physicists VO1+PS1	VO3+PS2	Analysis 2	VO4+PS2
Mathematical Methods of Physics 1	VO3	Mathematical Methods of Physics 1	VO3
Mathematical Methods of Physics 1	PS2	Mathematical Methods of Physics 1	PS2
Mathematical Methods of Physics 2	VO2	Mathematical Methods of Physics 2	VO3
Mathematical Methods of Physics 2	PS1	Mathematical Methods of Physics 2	PS2
Introduction to Theoretical Physics	VO3	Theoretical Physics 1	VO4
Introduction to Theoretical Physics	PS2	Theoretical Physics 1	PS2
Theoretical Physics 1	VO4	Theoretical Physics 3	VO4
Theoretical Physics 1	PS2	Theoretical Physics 3	PS2
Theoretical Physics 2	VO4	Theoretical Physics 2	VO4
Theoretical Physics 2	PS2	Theoretical Physics 2	PS2
Theoretical Physics 3	VO4	Theoretical Physics 4	VO4
Theoretical Physics 3	PS2	Theoretical Physics 4	PS2
Astrophysics I & Astrophysics II	VO2 VO2	Astrophysics 1	VO3+PS1
Physics Laboratory 1	PR4	Physics Laboratory 1	PR4
Physics Laboratory 2	PR4	Physics Laboratory 2	PR4
Advanced Laboratory 1	PR4	Advanced Laboratory 1	PR4

Equivalence list – Bachelor's Programme Physics

Notice according to § 35 Para 1 of the „Regulations of Study Law", republished in the University of Innsbruck Bulletin in the version of 3 February 2006, Issue 16, No 90:

Positively assessed exams, taken as part of the Bachelor's Programme Physics at the University of Innsbruck (curriculum published in the version of the University of Innsbruck Bulletin from 16 June 2011, Issue 31, No 483) will be recognised as equal towards the exams of the curriculum published in the version of the University of Innsbruck Bulletin from 2 June 2014, Issue 24, No 397 as follows:

(1) For compulsory modules, the following equivalence list applies:

Curriculum published in the version of the University of Innsbruck Bulletin from 16 June 2011, Issue 31, No 483		**Curriculum published in the version of the University of Innsbruck Bulletin from 2 June 2014, Issue 24, No 397**	
§ 5, 4.	Programming for Physicists (PR2; 2.5 ECTS-Credits)	§ 5(1) 4.	Programming for Physicists (PR2; 2.5 ECTS-Credits)
§ 5, 3.	Physics III: Quantum, Atoms and Solid State Physics (VO4; 4.5 ECTS-Credits)	§ 5 (1) 9.a	Physics III: Quantum and Atom Physics (VO4; 4.5 ECTS-Credits)
§ 5, 3.	Physics III: Quantum, Atoms and Solid State Physics (PS2; 3 ECTS-Credits)	§ 5(1) 9.a.	Physics III: Quantum and Atom Physics (PS2; 3 ECTS-Credits)
§ 5, 14.	Atoms, Molecules and Plasmas (VO2; 2 ECTS-Credits)	§ 5(2) 2.a.	Atomic and Molecule Physics (VO3; 3 ECTS-Credits)
§ 5, 14.	Atoms, Molecules and Plasmas (PS1; 2 ECTS-Credits)	§ 5(2)2.b.	Atomic and Molecule Physics (PS1; 2 ECTS-Credits)
§ 5,14.	Solid State Physics (VO2; 2 ECTS-Credits)	§ 5(2)3.a.	Solid State Physics (VO3; 3 ECTS-Credits)
§ 5,14.	Solid State Physics (PS1; 1.5 ECTS-Credits)	§ 5(2) 3.a.	Solid State Physics (PS1; 2 ECTS-Credits)
§ 5,15.	Advanced Laboratory with Bachelor's Thesis (PR4; 7.5 ECTS-Credits)	§ 5(1)13.	Advanced Laboratory (PR4; 7.5 ECTS-Credits)
§ 5, 23.	Seminar with Bachelor's Thesis (SE2; 7.5 ECTS-Credits)	§ 5(1)21.	Seminar with Bachelor's Thesis (SE2; 10 ECTS-Credits)

(2) Individual cases, where this regulation does not apply, will be decided in order that no disadvantage shall arise for the student due to the modification.