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 as of 1 October 2019

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

§ 1 Qualification profile

The Bachelor's Programme Mathematics prepares graduates for occupational opportunities as mathematicians in industry and economy, and for the Master's Programme Mathematics. The career fields range from high-tech industry, telecommunications and information technology to logistics, banks, insurances and statistical offices.

Graduates are qualified for innovative solutions of mathematical problems originating from science, engineering, economy, and medicine.

The programme conveys:

- basic knowledge of algebra, analysis, numerical mathematics, probability theory and statistics, discrete mathematics as well as geometry,
- in-depth knowledge of applied branches in these subjects,
- training of creative, analytical and sound reasoning,
- the ability to independently develop mathematical knowledge,
- knowledge of the efficient use of mathematical software,
- the ability to work in a team as well as to present and document results.

§ 2 Allocation

The Bachelor's Programme Mathematics is grouped among the engineering sciences.

§ 3 Scope and duration

The Bachelor's Programme Mathematics covers 180 ECTS-Credits, with a duration of six semesters. Compulsory modules, amounting to 160 ECTC-Credits and elective modules, amounting to 20 ECTS-Credits, are to be taken.

§ 4 Types of courses and maximum number of participants

(1) **Lecture (VO)**

Lectures introduce, in a didactically well-designed manner, central concepts, results and methods of the respective subject.

Purpose: raise interest and to facilitate well-structured knowledge and basic understanding of a subject in a relatively short period of time.

(2) **Study orientation course (SL)**

The study orientation course conveys an overview on the main contents of the study programme, and it forms the basis for the decision to choose the study programme. Attendance in the study orientation course is compulsory. Maximum number of participants: 25

(3) **Introductory seminar (PS)**

Introductory seminars are usually linked to a lecture. The students are assigned tasks and the solutions thereof are discussed in the introductory seminar. If the introductory seminar is linked to a lecture, the content of the lecture is repeated and exercises are carried out.

Introductory seminars particularly promote the following core competences: sound, analytical and creative dealing with mathematical and logical problems, presentation and communication skills, team work, self-management and time management skills as well as project management.

Course with continuous assessment; maximum number of participants: 25

(4) **Practical Training Course (PR)**

A practical training course promotes the acquisition of skills through guided but independent work and the practical discussion of scientific content.

Moreover, special core competences such as team work, sound, analytical and creative dealing with simple mathematical and logical problems, and communication skills are to be promoted.

Course with continuous assessment; maximum number of participants: 25

(5) **Seminar (SE)**

A seminar serves the scientific examination of contents and methods of a subject through presentations, written assignments and discussions. Students learn written (assignment) and oral (seminar presentation) and demonstration of scientific findings.

Seminars particularly promote the following core competences: presentation and communication skills, self-management and time management skills as well as project management, decision-making and problem-solving skills, ability to independently develop mathematical contents and to comprehensibly document results.

Course with continuous assessment; maximum number of participants: 15

§ 5 Compulsory Modules

1.	**Compulsory Module: Linear Algebra and Analytic Geometry 1**	**h**	**ECTS-Credits**
a.	**VO Linear Algebra and Analytic Geometry 1** Matrix algebra; linear equation systems; vector spaces; vector spaces with dot products (introduction to Euclidian geometry); calculating with functions; eigenvalue problem.	3	4.5
b.	**VO Advanced Study of Linear Algebra and Analytic Geometry** Advanced study of the contents of the lecture “Linear Algebra and Analytic Geometry 1”	1	1.5
c.	**PS Linear Algebra and Analytic Geometry 1** Discussion, advanced study and practice of the contents presented in the lecture; practice in scientific argumentation and presentation of mathematical contents.	2	4.0
	Total	**6**	**10**

	Learning Outcomes: Graduates of this module understand the contents of the lecture and are able to repeat and apply them. They have acquired the competence to independently elaborate similar contents. They are able to apply the most important concepts of linear algebra appropriately. Moreover, they have acquired a basic understanding for the way of thinking in mathematics.
	Prerequisites: none

2.	**Compulsory Module: Analysis 1**	**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; convergence of series of functions.	3	4.5
b	**VO Advanced Study of Analysis** Advanced study of the contents dealt with in the lecture	1	1.5
c.	**PS Analysis 1** Discussion, advanced study and practice of the contents dealt with in the lecture; practice in scientific argumentation and presentation of mathematical contents.	2	4.0
	Total	**6**	**10**
	Learning Outcomes: Graduates of this module understand the contents of the lecture and are able to repeat and apply them. They have acquired the competence to independently elaborate similar contents. They are able to apply the most important concepts of linear algebra appropriately. Moreover, they have acquired a basic understanding for the way of thinking in mathematics.		
	Prerequisites: none		

3.	**Compulsory Module: Practical Exercises**	**h**	**ECTS-Credits**
a.	**PR Practical Exercises** Practical calculation exercises on the content of Analysis 1 and Linear Algebra 1; highlighting some connections between the contents.	4	5
	Total	**4**	**5**
	Learning Outcomes: Students of this module can reproduce important basic calculation methods and have acquired simple mathematical problems and to solve and transfer the calculation procedures to similar content. Moreover, they have acquired a basic understanding for the way of thinking in mathematics.		
	Prerequisites: none		

4.	Compulsory Module: Scientific Working and Profession	h	ECTS-Credits
a.	**PS Introduction to Scientific Working, Mathematical Software and Programming** Introduction to LaTeX and the computer algebra system wxMaxima; principle concepts of programming; Use of a computer algebra system to solve mathematical problems (numeric and symbolic calculations, visualization); implementation of simple algorithms using a specified program language.	3	4.5
b.	**VO Studies and Profession** Aspects of working as a mathematician; contents of the curriculum; gender aspects in mathematics.	1	0.5
	Total	**4**	**5**
	Learning Outcomes: Students of this module have acquired the ability to use selected mathematical software and to implement simple mathematic algorithms into selected software language. They have learned how to transfer criteria into mathematical content and formal design in a text. Furthermore, they know the occupational profile of mathematicians and have gained an overview of the topic of equality and gender as well as of their study programme.		
	Prerequisites: none		

5.	Compulsory Module: Linear Algebra and Analytic Geometry 2	h	ECTS-Credits
a.	**VO Linear Algebra and Analytic Geometry 2** Use of methods of linear algebra and problems of room and space geometry (basic theory of Euclidean spaces, movements in the plane and in space); quadratic functions and quadrics.	4	6
b.	**PS Linear Algebra and Analytic Geometry 2** Discussion, advanced study and practicing the contents of the lecture; exercises in scientific argumentation and presentation of mathematical contents.	2	4
	Total	**6**	**10**
	Learning Outcomes: Students of this module understand the content of the lectures and they can reproduce and implement them. They have acquired the ability to work out similar content on their own. They can apply the most advanced concepts of Linear Algebra and Analytical Geometry and can apply them appropriately. Furthermore, they have gained an in-depth understanding of the methods of Linear Algebra and Analytical Geometry.		
	Prerequisites: none		

6.	Compulsory Module: Analysis 2	h	ECTS-Credits
a.	**VO Analysis 2** Differential and integral calculus in several variables, including topological concepts in $\mathbf{R}^n$; curves and surfaces in $\mathbf{R}^3$; integral theorem.	4	6
b.	**PS Analysis 2** Discussion, advanced study and practicing the contents of the lecture; exercises in scientific argumentation and presentation of mathematical contents.	2	4
	Total	**6**	**10**
	Learning Outcomes: Students of this module understand the content of the lectures and they can reproduce and apply them. They have acquired the ability to work out similar content on their own. They can apply the most advanced concepts of Analysis appropriately. Furthermore, they have gained an in-depth understanding of the methods of Analysis.		
	Prerequisites: none		

7.	Compulsory Module: Stochastics 1	h	ECTS-Credits
a.	**VO Stochastics 1** Introduction to approaches and methods of the theory of probability; provision of mathematical models to describe random-dependent phenomena, Laplace experiments, general probability measures and spaces; conditional probability, random variables, discrete and continuous distributions; stochastic independence; introduction to integration theory, expectation value, variance.	4	6
b.	**PS Stochastics 1** Discussion, advanced study and practicing the contents of the lecture; exercises in scientific argumentation and presentation of mathematical contents.	2	4
	Total	**6**	**10**
	Learning Outcomes: Graduates of this module understand the content of the lectures and they can reproduce and apply them. They have acquired the ability to work out similar content on their own. They can apply the concepts of probability theory and stochastics. Furthermore, they have gained a basic understanding of how stochastics works.		
	Prerequisites: none		

8.	Compulsory Module: Algebra 1	h	ECTS-Credits
a.	**VO Algebra 1** Basic algebraic structures like groups, group actions, polynomial rings, residue class rings, factorial rings, simple field extensions.	3	4.5
b.	**PS Algebra 1** Discussion, advanced study and practicing the contents of the lecture; exercises in scientific argumentation and presentation of mathematical contents..	2	3
	Total	**5**	**7.5**

	Learning Outcomes: Students of this module understand the content of the lectures and they can reproduce and apply it. They have acquired the ability to work out similar content on their own. They can apply simple concepts of Algebra appropriately. Furthermore, they have gained a basic understanding of the methods of Algebra.
	Prerequisites: none

9.	**Compulsory Module: Analysis 3 (Ordinary Differential Equations and Complex Analysis)**	**h**	**ECTS-Credits**
a.	**VO Analysis 3** Ordinary Differential Equations (systems of linear ODEs, existence and uniqueness, qualitative theory), modelling with differential equations. Introduction to the topic of complex analysis (holomorphic functions, integration in C, meromorphic functions).	4	6
b.	**PS Analysis 3** Discussion, advanced study and practicing of the contents of the lecture; exercises in scientific argumentation and presentation of mathematical contents.	2	4
	Total	**6**	**10**
	Learning Outcomes: Students completing this module understand the content of this lecture and they can reproduce and apply it. They have acquired the ability to work out similar content on their own. They are able to implement advanced methods of analysis appropriately. They have also acquired a basic understanding of the theory of ordinary differential equations and of the theory of functions.		
	Prerequisites: none		

10.	**Compulsory Module: Statistics**	**h**	**ECTS-Credits**
a.	**VO Statistics** Descriptive statistics, connection between sample and data sample, between distribution and empirical probability, between exception and mean as well as between variance and empirical variance. Introduction to mathematical statistics: Testing Statistical Hypotheses, Analysis of variance, regression and correlation.	2	3
b.	**PS Statistics** Discussion, advanced study and practicing of the contents of the lecture; exercises in scientific argumentation and presentation of mathematical contents. Introduction to selected statistical software.	2	2
	Total	**4**	**5**
	Learning Outcomes: Graduates of this module understand the content of the lectures and they can reproduce and apply it. They have acquired the ability to work out similar content on their own. They can apply simple methods of statistics, especially with suitable software. Furthermore, they have acquired a basic understanding of the methods of Statistics.		
	Prerequisites: none		

11.	Compulsory Module: Numerical Mathematics 1	h	ECTS-Credits
a.	**VO Numerical Mathematics 1** Introduction in the methods and mode of thoughts of numerical analysis; numerical integration; interpolation and approximation; error analysis, numerics of linear systems of equations.	3	4.5
b.	**PS Numerical Mathematics 1** Discussion, advanced study and practicing of the contents of the lecture with case studies. The procedures discussed in the lecture are implemented in MATLAB.	2	3
	Total	**5**	**7.5**
	Learning Outcomes: Graduates of this module understand the content of the lectures and they can reproduce and apply it. They have acquired the ability to apply the basic methods of numerical mathematics on their own. They can apply basic methods of Numerical Mathematics appropriately and can implement and demonstrate them with MATLAB. Moreover, they have acquired a basic understanding of the methods of Numerical Mathematics.		
	Prerequisites: none		

12.	Compulsory Module: Analysis 4 (Topology and Functional Analysis)	h	ECTS-Credits
a.	**VO Analysis 4** Basic concepts of topology with regard to functional analysis, in particular introduction to the theory of Banach and Hilbert spaces.	3	4.5
b.	**PS Analysis 4** Discussion, advanced study and practicing of the contents of the lecture; exercises in scientific argumentation and presentation of mathematical contents.	2	3
	Total	**5**	**7.5**
	Learning Outcomes: Students of this module understand the content of the lectures and they can reproduce and apply them. They can apply appropriately simple methods of Topology and Analysis. Moreover they have also acquired a basic understanding of the methods of Topology and Functional Analysis.		
	Prerequisites: none		

13.	Compulsory Module: Discret Mathematics	h	ECTS-Credits
a.	**VO Discreet Mathematics** Well-founded and structural induction, graph theory, counting theory, complexity theory, polygon meshes and projective geometry.	3	4.5
b.	**PS Discreet Mathematics** Discussion, advanced study and practicing of the contents of the lecture; exercises in scientific argumentation and presentation of mathematical contents.	2	3
	Total	**5**	**7.5**

	Learning Outcomes: Graduates of this module understand the content of the lectures and they can reproduce and apply it. They can apply appropriately simple methods of Discrete Mathematics. Moreover, they have also acquired a basic understanding of the methods of Discrete Mathematics.
	Prerequisites: none

14.	**Compulsory Module: Numerical Mathematics 2**	**h**	**ECTS-Credits**
a.	**VO Numerical Mathematics 2** Advanced topics from the fields of numerical mathematics, in particular numerics of eigenvalue problems, ordinary differential equations and iteration methods for linear and nonlinear equation systems.	3	4.5
b.	**PS Numerical Mathematics 2** Discussion, advanced study and practicing of the contents of the lecture by case studies. The procedures discussed in the lecture are implemented in MATLAB.	2	3
	Total	**5**	**7.5**
	Learning Outcomes: Graduates of this module understand the content of the lectures and they can reproduce and apply it. They have acquired the ability to implement advanced methods of Numerical Mathematics appropriately and can use and demonstrate them with MATLAB. Moreover, they have acquired an in-depth understanding of the methods of Numerical Mathematics.		
	Prerequisites: none		

15.	**Compulsory Module: Algebra 2**	**h**	**ECTS-Credits**
a.	**VO Algebra 2** Groups and representations, Galois theory or field theory, modules of principal ideal rings, further selected topics of algebra.	3	4.5
b.	**PS Algebra 2** Discussion, advanced study and practicing of the contents of the lecture; exercises in scientific argumentation and presentation of mathematical contents.	2	3
	Total	**5**	**7.5**
	Learning Outcomes: Students of this module understand the content of the lectures and they can reproduce and apply this. They have acquired the ability to work out similar content for themselves. They can use advanced methods of Algebra appropriately. Furthermore, they have acquired an in-depth understanding of the methods of Algebra.		
	Prerequisites: none		

16.	Compulsory Module: Partial Differential Equations	h	ECTS-Credits
a.	**VO Partial Differential Equations** Elemental theory and methods for solving some important partial differential equations (heat equation, wave equations, transport equation …).	3	4.5
b.	**PS Partial Differential Equations** Discussion, advanced study and practicing of the contents of the lecture; exercises in scientific argumentation and presentation of mathematical contents.	2	3
	Total	**5**	**7.5**
	Learning Outcomes: Graduates of this module understand the content of the lectures and they can reproduce and apply it. They have acquired the ability to produce similar content for themselves. They can reproduce solutions to important Partial Differential Equations and can analyse them qualitatively and also implement simple solutions appropriately. Furthermore, they have achieved a fundamental understanding of the theory of Partial Differential Equations.		
	Prerequisites: none		

17.	Compulsory Module: Geometry	h	ECTS-Credits
a.	**VO Geometry** Introduction to projective, affine and Euclidean geometry; transformations, projections; freeform curves and surfaces; examples in differential geometry and descriptive geometry; modelling and solving geometric problem using CAD-software.	3	4.5
b.	**PS Geometry** Discussion, advanced study and practicing of the contents of the lecture; exercises in scientific argumentation and presentation of mathematical contents.	2	3
	Total	**5**	**7.5**
	Learning Outcomes: Students of this module understand the content of the lectures and they can reproduce and apply it. They can produce similar content for themselves. With the help of software, they can illustrate problems of Descriptive Geometry and also apply them appropriately. Moreover, they have acquired a basic understanding of the methods of Geometry.		
	Prerequisites: none		

18.	Compulsory Module: Stochastics 2	h	ECTS-Credits
a.	**VO Stochastics 2** Basic concepts of probability theory, in particular: convergence of random variables, uniform integrability, the law of the iterated logarithm, characteristic functions, convolution of probability measures, weak convergence, the central limit theorem and conditional expectation.	3	4.5
b.	**PS Stochastics 2** Discussion, advanced study and practicing of the contents of the lecture; exercises in scientific argumentation and presentation of mathematical contents.	2	3

	Total	**5**	**7.5**
	Learning Outcomes: Graduates of this module understand the content of the lectures and they can reproduce and apply it. They can produce similar content for themselves. They can also apply appropriately advanced methods of Stochastic Analysis. Furthermore, they have gained an in-depth understanding of the methods of Stochastics.		
	Prerequisites: none		

19.	**Compulsory Module: Modelling**	**h**	**ECTS-Credits**
a.	**VO Modelling** Mathematical modelling, qualitative and quantitative approaches.	3	4.5
b.	**PS Modelling** Discussion, advanced study and practicing of the contents of the lecture with case studies.	2	3
	Total	**5**	**7.5**
	Learning Outcomes: Having passed this module, students understand the content of the lectures and they can reproduce and apply it. They can produce similar content for themselves. They are able to abstract, to model and to analyse simple problems from various applications of mathematics and to apply appropriate solution procedures. Moreover, they have gained a basic understanding of mathematical modelling.		
	Prerequisites: none		

20.	**Compulsory Module: Optimisation**	**h**	**ECTS-Credits**
a.	**VO Optimisation** Introduction to linear, combinatorial, convex and nonlinear optimisation.	3	4.5
b.	**PS Optimisation** Discussion, advanced study and practicing of the contents of the lecture; exercises in scientific argumentation and presentation of mathematical contents.	2	3
	Total	**5**	**7.5**

	Learning Outcomes: Having passed this module, students understand the content of the lectures and they can reproduce and apply it. They have acquired the ability to produce similar content by themselves. They can identify optimisation problems in applications and transfer them into a mathematical formula and implement the corresponding algorithms and solution procedures appropriately. Moreover, they should have gained a fundamental understanding of the methods of mathematical optimisation.
	Prerequisites: none

21.	Compulsory Module: Subdisciplines of Mathematics	h	ECTS-Credits
	SE Subdisciplines of Mathematics Advanced study of a subdiscipline of mathematics in a seminar.	2	5
	Total	**2**	**5**
	Learning Outcomes: Having passed this module, students are able to deal with a subdiscipline of mathematics in a methodically appropriate way and to present the results orally and in writing in an understandable fashion.		
	Prerequisites: none		

22.	Compulsory Module: Seminar with Bachelor's Thesis	h	ECTS-Credits
	SE Seminar with Bachelor's Thesis Advanced study of a subdiscipline of mathematics in a seminar and Bachelor's Thesis.	2	7.5
	Total	**2**	**7.5**
	Learning Outcomes: Having passed this module, students are able to deal with a subdiscipline of mathematics in a methodically appropriate way and to present the results orally and in writing in an understandable fashion.		
	Prerequisites: none		

23.	Compulsory Module: Auxilary Skills	h	ECTS-Credits
	Courses amounting to 10 ECTS-Credits must be selected from the Bachelor's programmes offered at the University of Innsbruck. At least one course must be from the field of ethics, theory of science or history of science. It is recommended to select a course on gender aspects in mathematics, computer science or physics.	-	10
	Total	**-**	**10**
	Learning Outcomes: Graduates of this module have gained an insight into areas beyond the contents covered in modules 1-22.		
	Prerequisites: none		

§ 6 Studies Induction and Orientation Stage

(1) Within the scope of the Studies Induction and Orientation Stage, which takes place in the first semester, the following course examinations must be passed:

1. VO Linear Algebra and Analytic Geometry 1 (CM 1 lit. a/3 hrs. /4.5 ECTS-Credits),
2. VO Analysis 1 (CM 2 lit. a/3 hrs. /4.5 ECTS-Credits).

(2) Successful passing of all exams of the Studies Induction and Orientation Stage entitles to passing all further courses and examinations as well as to writing the Bachelor's Thesis.

(3) Before successful completion of the Studies Induction and Orientation Stage courses amounting to 21 ECTS-Credits may be passed. The requirements specified in the curriculum must be met.

§ 7 Bachelor's Thesis

A Bachelor's Thesis is to be completed within the scope of compulsory module 22. The Bachelor's Thesis is to be presented and submitted in paper form and in digital version to the lecturer of the seminar. 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 Z 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 Z 1 and 2 do not suffice, the available places are drawn by random.

§ 9 Examination regulations

(1) For each lecture of a compulsory or elective module, an examination is to be taken. The instructor announces the type of examination (written or oral) before the start of the course.

(2) For each study orientation course, an examination is to be taken. The instructor announces the type of examination (written or oral) before the start of the course.

(3) In seminars, the success of participation, a presentation and a written assignment are assessed. If the bachelor's thesis is completed within the context of a seminar, the written bachelor's thesis and its presentation are evaluated within the context of a seminar presentation.

(4) The methods of evaluation in all other continuous assessment courses (‚immanent examination') are to be defined by the instructor before the start of the course.

(5) A module is completed when all of its courses have been successfully completed.

§ 10 Academic Degree

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

§ 11 Coming into force

(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 333 is effective as of 1 October 2010 and applies to all students.

(3) §§ 1, 3, 4, 5, 7 and 9 in the version published in the University of Innsbruck Bulletin of 16 June 2011, Issue 31, No 484 is effective as of 1 October 2011 and applies to all students.

(4) § 6 in the version published in the University of Innsbruck Bulletin of 16 June 2011, Issue 31, No 484 is effective as of 1 October 2011 and applies to all students beginning their degree programme as of winter semester 2011/2012.

(5) § 6 in the version published in the University of Innsbruck Bulletin of 16 June 2011, Issue 31, No 484 ceases to be effective at the end of 30 September 2014.

(6) § 11 para. 5 ceases to be effective after 30 September 2014.

(7) § 6, as announced in the University of Innsbruck Bulletin of 16 June 2011, Issue 31, No. 484, ceases to be effective after 31 December 2015.

(8) The amendments according to the University of Innsbruck Bulletin of 2 May 2016, Issue 24, No. 375 come into force as follows:

1. §6 comes into force on 1 October 2016 and is to be applied to all students commencing their study programme as of the 2016/2017 winter semester and to all students, who have not yet

passed the courses of the studies induction and orientation stage according to the previous regulations.

2. §5 par. 1 no.1 and 2 and the heading of §7 come into force on 1 October 2016 and are to be applied to all students.

(9) The changes of the curriculum in the version of the University of Innsbruck Bulletin of 24 May 2019, Issue 49, No. 472 come into effect as of 1 October 2019 and are to be applied to all students.

§ 12 Transitory Provisions

(1) Regular students who have commenced the Diploma Programme Technical Mathematics 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 five semesters, the second section within a maximum of seven 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 Technical Mathematics 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 Technical Mathematics in the version of the University of Innsbruck Bulletin from 23 April 2007, issue 32, no. 196, 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. 333, as follows:

Curriculum 2007	**Curriculum 2010**
Numerical Mathematics 1, PR 2	Numerical Mathematics 1, PS 2
Numerical Mathematics 2, PR 2	Numerical Mathematics 2, PS 2

(6) The course examinations according to the curriculum for the Bachelor's Programme Technical Mathematics in the version of the University of Innsbruck Bulletin from 23 June 2010, issue 42, no. 333, 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. 484, as follows:

Curriculum 2007/2010:	**ECTS-Credits**	**Curriculum 2011:**	**ECTS-Credits**
Introduction to Mathematics 1, VO3	4.5	Linear Algebra 1, VO3 Linear Algebra 1 (Consolidation) 1, VO1	4.5 1.5
Introduction to Mathematics 1, PS2	2.5	Linear Algebra and Analytic Geometry 1, SL1 and PS1	2.5 1.5
Introduction to Mathematics 2, VO3	4.5	Analysis 1, VO4	6
Introduction to Mathematics 2, PS2	2.5	Analysis 1, SL1 and PS1	2.5 1.5
Introduction to Mathematics 1, PR1 Introduction to Mathematics 2, PR1 Advanced Analysis 1, VO2	0.5 0.5 3	Practical Exercises, PR4	5
Introduction to Computer Science, PS2 Introduction to Scientific Working, VO1	3 1.5	Introduction to Scientific Working, Mathematical Software and Programming, PS3	4.5
Introduction to Computer Science, VO3	4.5	Analysis 4, VO3	4.5
Introduction to Scientific Working, PS1	1	Mathematics - Studies and Profession, VO1	0.5
Introduction to Physics, VO5	7.5	Algebra 2, VO3 + PS2	7.5
Advanced Analysis 1, PS1 Complex Analysis, PS1	2 2	Analysis 4, PS2	3

Linear Algebra 2, VO3	4.5	Linear Algebra and Analytic Geometry 2, VO4	6
Linear Algebra 2, PS2	3	Linear Algebra and Analytic Geometry 2, PS2	4
Algebra, VO3	4.5	Algebra 1, VO3	4.5
Algebra, PS2	3	Algebra 1, PS2	3
Ordinary Differential Equations, VO3 Complex Analysis, VO2	4.5 3	Analysis 3 (Ordinary Differential Equations and Complex Analysis), VO4	6
Ordinary Differential Equations, PS2	3	Analysis 3 (Ordinary Differential Equations and Complex Analysis), PS2	4
Stochastics 1, VO3	4.5	Stochastics 1, VO4	6
Stochastics 1, PS2	3	Stochastics 1, PS2	4
Geometric Modelling, Visualization and CAD, VO2 Analytic Geometry, VO1	3 1.5	Geometry, VO3	4.5
Geometric Modelling, Visualization and CAD, PS1 Analytic Geometry, PS1	2 1	Geometry, PS2	3
Technology, Humans and Society, VO1	1.5	Courses amounting to 1.5 ECTS-Credits (module 23); counting to Ethics, Scientific Theory or Scientific History.	1.5
Technology, Humans and Society, PS1	1	Courses amounting to 1 ECTS-Credits (module 23); counting to Ethics, Scientific Theory or Scientific History.	1
Seminar 1 with Bachelor Thesis, SE2	7.5	Subdisciplines of Mathematics, SE2 Courses amounting to 2.5 ECTS-Credits (elective module).	5 2.5
Seminar 2 with Bachelor Thesis, SE2	7.5	Seminar with Bachelor Thesis, SE2	7.5
Courses from the elective module		Courses from the module 23	

(7) For students, who have started their study programme before the 2016/2017 winter semester, the limitation of ECTS-Credits that may be passed before completion of the studies induction and orientation stage according to §6 par. 3 in the version of the University of Innsbruck Bulletin of 2 May 2016, Issue 24, No. 375 is not to be applied before 30 November 2017. After that point in time more courses and examinations may only be taken after successful completion of the whole studies induction and orientation stage.

Appendix 1: Recognition of Exams

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

Exams successfully completed:	**Recognised as:**
Linear Algebra, VO4	Introduction to Mathematics 1, VO3
Linear Algebra, PS2	Introduction to Mathematics 1, PS2 and PR1
Analytic Geometry, VO4	Linear Algebra 2, VO3 Analytic Geometry, VO1 and PS1
Analytic Geometry, PS2	Linear Algebra 2, PS2
Algebra 1, VO4	Algebra, VO3
Algebra 1, PS2	Algebra, PS2
Descriptive Geometry, VO2	Geometric Modelling, Visualization and CAD, VO2 and PS1
Analysis 1, VO4	Introduction to Mathematics 2, VO3 Analysis 1 (Consolidation), VO2
Analysis 1, PS2 Introduction to Mathematical Software, PR2	Introduction to Mathematics 2, PS2 and PR1 Analysis 1 (Consolidation), PS1
Analysis 2, VO4	Analysis 2, VO4
Analysis 2, PS2	Analysis 2, PS2
Analysis 3, VO4	Complex Analysis, VO2
Analysis 3, PS2	Complex Analysis, PS1
Ordinary Differential Equations, VO2	Ordinary Differential Equations, VO3
Ordinary Differential Equations, PS1	Ordinary Differential Equations, PS2
Operating Systems and Computer Networks, VU2 Programming, VO2 and PS2	Introduction to Computer Science, VO3 and PS2
Stochastics 1, VO2 Stochastics 2, VO2	Stochastics 1, VO3
Stochastics 1, PS1 Stochastics 2, PS1	Stochastics 1, PS2
Numerical Descriptive Algebra, VU3	Numerical Mathematics 1, VO3 and PR2
Numerical Analysis, VU3	Numerical Mathematics 2, VO3 and PR2
Graph Theory, VO2 and PS1	Discrete Mathematics, VO3 und PS2
Formal Methods 1, VO3 and PS2	Discrete Mathematics, VO3 und PS2
Physics 1, VO4	Introduction to Physics, VO5
Analysis 4, VO4	Courses with the appendix WTM (elective module) amounting to 8 ECTS-Credits
Analysis 4, PS2	Courses with the appendix WTM (elective module) amounting to 3 ECTS-Credits

Topology, VU3	Courses with the appendix WTM (elective module) amounting to 4.5 ECTS-Credits
Algebra 2, VU3	Courses with the appendix WTM (elective module) amounting to 4.5 ECTS-Credits