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).

Principal version published in the University of Innsbruck Bulletin of
23 April 2007, Issue 32, No 196

Correction published in the University of Innsbruck Bulletin of
15 October 2008, Issue 2, No 13

Modification published in the University of Innsbruck Bulletin of
23 June 2010, Issue 42, No 333

Modification published in the University of Innsbruck Bulletin of
16 June 2011, Issue 31, No 484

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

§ 1 Profile

The Bachelor's Programme in Technical Mathematics prepares graduates for occupational opportunities as mathematicians in industry and economy, and for the Master's Programme in Technical 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 in Technical Mathematics is grouped among the engineering sciences.

§ 3 Scope and duration

The Bachelor's Programme in Technical 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 Courses and numbers of participants

(1) Lecture (VO '*Vorlesung*')

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 '*Studienorientierungslehrveranstaltung*')

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 '*Proseminar*')

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 ‚*Praktikum*')

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 '*Seminar*')

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 Modules (Title, Type, Description, Course Content)

Compulsory modules

1. *Linear Algebra and Analytic Geometry 1*	10 ECTS-Credits
Objective 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 important concepts of Linear Algebra as appropriate. Furthermore they have gained a basic understanding of how mathematics works.	
Linear Algebra 1, VO3 *Contents* Matrices; systems of linear equations; vector spaces; vector spaces with a scalar product (introduction to Euclidean geometry); computations with functions; eigenvalue problems. Linear Algebra 1 (Consolidation), VO1 *Contents* Consolidation of the contents of the lecture Linear Algebra 1 Linear Algebra and Analytic Geometry 1, SL1 *Contents* Discussion, consolidation and practicing the contents of the lecture; exercises in scientific argumentation and presentation of mathematical contents. Linear Algebra and Analytic Geometry 1, PS1 *Contents* Discussion, consolidation and practicing the contents of the lecture; exercises in scientific argumentation and presentation of mathematical contents.	4.5 ECTS-Credits 1.5 ECTS-Credits 2.5 ECTS-Credits 1.5 ECTS-Credits

2. Analysis 1	10 ECTS-Credits
Objective 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 important concepts of Analysis as appropriate. Furthermore, they have gained a basic understanding of how mathematics works.	
Analysis 1, VO4 *Contents* Introduction to analysis; the basic concepts of mathematics necessary for this introduction; real numbers; functions; calculus in one variable. Analysis 1, SL1 *Contents* Discussion, consolidation and practicing the contents of the lecture; exercises in scientific argumentation and presentation of mathematical contents. Analysis 1, PS1 *Contents* Discussion, consolidation and practicing the contents of the lecture; exercises in scientific argumentation and presentation of mathematical contents.	6 ECTS-Credits 2.5 ECTS-Credits 1.5 ECTS-Credits

3. *Practical Exercises*	5 ECTS-Credits
Objective	

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 gained a basic understanding of the way mathematics works.	
Practical Exercises in Analysis and Linear Algebra, PR4 *Contents* Practical calculation exercises on the content of Analysis 1 and Linear Algebra 1; highlighting some connections between the contents.	5 ECTS-Credits

4. *Scientific Working and Profession*	5 ECTS-Credits
Objective 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.	
Introduction to Scientific Working, Mathematical Software and Programming, PS3 *Contents* 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. Mathematics - Studies and Profession, VO1 *Contents* Aspects of working as a mathematician; contents of the curriculum; gender aspects in mathematics.	4.5 ECTS-Credits 0.5 ECTS-Credits

5. *Linear Algebra and Analytic Geometry 2*	10 ECTS-Credits
Objective 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.	
Linear Algebra and Analytical Geometry 2, VO4 *Contents* 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. Linear Algebra and Analytical Geometry 2, PS2 *Contents* Discussion, consolidation and practicing the contents of the lecture; exercises in scientific argumentation and presentation of mathematical contents.	6 ECTS-Credits 4 ECTS- Credits

6. *Analysis 2*	10 ECTS-Credits
Objective 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 Analysis appropriately. Furthermore, they have gained an in-depth understanding of the methods of Analysis.	
Analysis 2, VO4 *Contents* Differential and integral calculus in several variables, including topological concepts in $\mathbf{R}^n$; curves and surfaces in $\mathbf{R}^3$; integral theorem. Analysis 2, PS2 *Contents* Discussion, consolidation and practicing the contents of the lecture; exercises in scientific argumentation and presentation of mathematical contents.	6 ECTS-Credits 4 ECTS-Credits

7. Stochastics 1	10 ECTS-Credits
Objective 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 concepts of probability theory and stochastics. Furthermore, they have gained a basic understanding of how stochastics works.	
Stochastics 1, VO4 *Contents* 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. Stochastics 1, PS2 *Contents* Discussion, consolidation and practicing the contents of the lecture; exercises in scientific argumentation and presentation of mathematical contents.	6 ECTS-Credits 4 ECTS-Credits

8. *Algebra 1*	7.5 ECTS-Credits
Objective 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 how Algebra works.	
Algebra 1, VO3 *Contents* Basic algebraic structures like groups, group actions, polynomial rings, residue class rings, factorial rings, simple field extensions. Algebra 1, PS2 *Contents* Discussion, consolidation and practicing the contents of the lecture; exercises in scientific argumentation and presentation of mathematical contents.	4.5 ECTS-Credits 3 ECTS-Credits

9. Analysis 3	10 ECTS-Credits
Objective Students completing this module understand the content of this lecture and they can reproduce and apply this. 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.	
Analysis 3, VO4 *Contents* 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). Analysis 3, PS2 *Contents* Discussion, consolidation and practicing the contents of the lecture; exercises in scientific argumentation and presentation of mathematical contents.	6 ECTS-Credits 4 ECTS-Credits

10. Statistics	5 ECTS-Credits
Objective 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 methods of statistics, especially with suitable software. Furthermore, they have acquired a basic understanding of the methods of Statistics.	

Statistics, VO2 *Contents* 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. Statistics, PS2 *Contents* Discussion, consolidation and practicing the contents of the lecture; exercises in scientific argumentation and presentation of mathematical contents. Introduction to selected statistical software.	3 ECTS-Credits 2 ECTS-Credits

11. Numerical Mathematics 1	7.5 ECTS-Credits
Objective Students 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.	
Numerical Mathematics 1, VO3 *Contents* Introduction in the methods and mode of thoughts of numerical analysis; numerical integration; interpolation and approximation; error analysis, numerics of linear systems of equations. Numerical Mathematics 1, PS2 *Contents* Discussion, consolidation and practicing the contents of the lecture with case studies. The procedures discussed in the lecture are implemented in MATLAB.	4.5 ECTS-Credits 3 ECTS-Credits

12. Analysis 4 (Topology and Functional Analysis)	7.5 ECTS-Credits
Objective 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.	
Analysis 4, VO3 *Contents* Basic concepts of topology with regard to functional analysis, in particular introduction to the theory of Banach and Hilbert spaces. Analysis 4, PS2 *Contents* Discussion, consolidation and practicing the contents of the lecture; exercises in scientific argumentation and presentation of mathematical contents.	4.5 ECTS-Credits 3 ECTS-Credits

13. *Discrete Mathematics*	7.5 ECTS-Credits
Objective Students 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.	
Discrete Mathematics, VO3 *Contents* Well-founded and structural induction, graph theory, counting theory, complexity theory, polygon meshes and projective geometry. Discrete Mathematics, PS2 *Contents* Discussion, consolidation and practicing the contents of the lecture; exercises in scientific argumentation and presentation of mathematical contents.	4.5 ECTS-Credits 3 ECTS-Credits

14. Numerical Mathematics 2	7.5 ECTS-Credits
Objective Students 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.	
Numerical Mathematics 2, VO3 *Contents* Further 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. Numerical Mathematics 2, PS2 *Contents* Discussion, consolidation and practicing the contents of the lecture by case studies. The procedures discussed in the lecture are implemented in MATLAB.	4.5 ECTS-Credits 3 ECTS-Credits

15. *Algebra 2*	7.5 ECTS-Credits
Objective 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.	
Algebra 2, VO3 *Contents* Groups and representations, Galois theory or field theory, modules of principal ideal rings, further selected topics of algebra. Algebra 2, PS2 *Contents* Discussion, consolidation and practicing the contents of the lecture; exercises in scientific argumentation and presentation of mathematical contents.	4.5 ECTS-Credits 3 ECTS-Credits

16. Partial Differential Equations	7.5 ECTS-Credits
Objective Students 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.	
Partial Differential Equations, VO3 *Contents* Detailed study of four exactly solvable partial differential equations: the linear transport equation, Laplace's equation, the heat equation, and the wave equation. Introduction to distributions. Partial Differential Equations, PS2 *Contents* Discussion, consolidation and practicing the contents of the lecture; exercises in scientific argumentation and presentation of mathematical contents.	4.5 ECTS-Credits 3 ECTS-Credits

17. Geometry	7.5 ECTS-Credits
Objective 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.	
Geometry, VO3 *Contents* 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. Geometry, PS2 *Contents* Discussion, consolidation and practicing the contents of the lecture; exercises in scientific argumentation and presentation of mathematical contents.	4.5 ECTS-Credits 3 ECTS-Credits

18. Stochastics 2	7.5 ECTS-Credits
Objective Students 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.	
Stochastics 2, VO3 *Contents* 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. Stochastics 2, PS2 *Contents* Discussion, consolidation and practicing the contents of the lecture; exercises in scientific argumentation and presentation of mathematical contents.	4.5 ECTS-Credits 3 ECTS-Credits

19. Modelling	7.5 ECTS-Credits
Objective Students of this module 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.	
Modelling, VO3 *Contents* Mathematical modelling, qualitative and quantitative approaches. Modelling, PS2 *Contents* Discussion, consolidation and practicing the contents of the lecture with case studies.	4.5 ECTS-Credits 3 ECTS-Credits

20. Optimisation	7.5 ECTS-Credits
Objective Students 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 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.	
Optimisation, VO3 *Contents* Introduction to linear, combinatorial, convex and nonlinear optimization. Optimisation, PS2 *Contents* Discussion, consolidation and practicing the contents of the lecture; exercises in scientific argumentation and presentation of mathematical contents.	4.5 ECTS-Credits 3 ECTS-Credits

21. Seminary	5 ECTS-Credits
Objective Students completing this module can deal methodologically correctly with a specific area of mathematics and present the results of this in both written and oral forms that are easy to understand.	
Radon Transforms and Tomography, SE2 *Contents* In-depth treatment in form of a seminar with a subsection of mathematics.	5 ECTS-Credits

22. Seminar with Bachelor Thesis	7.5 ECTS-Credits
Objective Students completing this module can deal methodologically correctly with an area of mathematics and present the results in both written and oral forms that are easy to understand.	
Seminar with Bachelor Thesis, SE2 *Contents* In depth analysis in form of a seminar and a thesis with a branch of mathematics.	7.5 ECTS-Credits

23. Auxiliary Skills	10 ECTS-Credits
Objective Students of this module have been given insights into topic areas that are covered by the content of modules 1-22.	
Teaching units amounting to 10 ECTS-Credits are to be completed. This must include at least one unit on Ethics, Scientific Theory or Scientific History. It is recommended to choose a teaching unit on Gender Aspects in Mathematics, Informatics or Physics.	

§ 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:

1. Linear Algebra and Analytic Geometry, SL1, 2.5 ECTS-Credits, from module 1
2. Analysis 1, SL1, 2.5 ECTS-Credits, from module 2
3. Studies and Profession, VO1, 0.5 ECTS-Credits, from module 4

(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 within the 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 in Technical Mathematics 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 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.

§ 12 Transitory Provisions

(1) Regular students who have commenced the Diploma Programme in 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 in 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 in 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 in 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**	**Curriculum 2011:**	**ECTS**
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	Seminary, 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	

Appendix 1: Recognition of Exams

The following positively assessed exams, taken as part of the Diploma Programme in 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 in 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

Appendix 2: Recommended course of study

1st semester

Introduction to Mathematics 1	7.5 ECTS	VO3+PS2+PR1
Introduction to Mathematics 2	7.5 ECTS	VO3+PS2+PR1
Introduction to Computer Science	7.5 ECTS	VO3+PS2
Introduction to Physics	7.5 ECTS	VO5

2nd semester

Analysis 2	10 ECTS	VO4+PS2
Analysis 1 (Consolidation)	5 ECTS	VO2+PS1
Discrete Mathematics	7.5 ECTS	VO3+PS2
Linear Algebra 2	7.5 ECTS	VO3+PS2

3rd semester

Algebra	7.5 ECTS	VO3+PS2
Ordinary Differential Equations	7.5 ECTS	VO3+PS2
Stochastics 1	7.5 ECTS	VO3+PS2
Numerical Analysis 1	7.5 ECTS	VO3+PR2

4th semester

Complex Analysis	5 ECTS	VO2+PS1
Stochastics 2	7.5 ECTS	VO3+PS2
Numerical Mathematics 2	7.5 ECTS	VO3+PR2
Geometric Modelling, Visualization and CAD	5 ECTS	VO2+PS1
Analytical Geometry	2.5 ECTS	VO1+PS1
Introduction to Scientific Working	2.5 ECTS	VO1+PS1

5th semester

Partial Differential Equations	7.5 ECTS	VO3+PS2
Modelling	7.5 ECTS	VO3+PR2
Optimisation	7.5 ECTS	VO3+PS2
Seminar 1 with Bachelor Thesis	7.5 ECTS	SE2

6th semester

Seminar 2 with Bachelor Thesis	7.5 ECTS	SE2
Technology, Humans and Society	2.5 ECTS	VO1+PS1
Elective Module	20 ECTS	