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## **Curriculum of the Secondary School Teacher Accreditation Programme for the subjects of Biology and Environmental Protection, Chemistry, Geography and Economics, Computer Science and Computer Science Management, Mathematics and Physics**

### **Qualification Profile for the Teacher Accreditation Programme for the subjects of Biology and Environmental Protection, Chemistry, Geography and Economics, Computer Science and Computer Science Management, Mathematics and Physics at the University of Innsbruck**

#### **(1) Principles of the Secondary Teacher Accreditation Programme**

The Secondary School Teacher Accreditation Programme aims at a preparatory vocational and scientific education for the certification of secondary school teachers with subject-specific, didactic, and pedagogical qualifications as well as school teaching practice. A scientifically sound basic education orientated on the state of knowledge of the respective disciplines, provides graduates with the necessary competences in order to work in their future occupational fields in a flexible and professional manner.

The Secondary Teacher Accreditation Programme at the University especially promotes self-initiative and organisation, critical awareness, cooperation, the ability to work in a team and commitment.

#### **(2) Occupational areas for graduates**

Graduates of a Secondary Teacher Accreditation Programme work as teachers at schools as well as in extracurricular educational institutions. They work in different social, cultural, legal and economic settings of the school and education system and its institutions.

The profession of the teacher is a pedagogical one: Graduates are academically educated experts in fostering personal development processes, arranging learning situations, accompanying learning processes, and assessing learning outcomes.

#### **(3) General didactic and interdisciplinary competences**

Teachers must have many different competences. The academic education of the teachers provides the base that must be continuously furthered all lifelong. These competences are in principle taught in all courses of the subject-specific, subject-didactic, pedagogical and school practical parts of the studies.

- Competence to impart knowledge: the ability to create interesting presentations with the use of new media (e.g. CD-ROM, Internet) and presentation techniques;

- Presentation competence: ability to head discussions and decision-making processes in smaller and bigger groups in a methodological flexible way;
- Evaluation competence: ability to document the learning progresses of others and of one's own; knowledge of different evaluation systems; ability to critically reflect on their possibilities and limits.
- Competence of explorative learning: learning by self-discovery, by experimenting, by problem solving based on the forming of hypothesis and their testing, by switching between acting and reflecting; competence to make pupils aware of problems with interesting tasks and to support them in their problem solving and testing of learning outcomes.
- Team competence: the ability to work in a team; willingness to cooperate, assertiveness and the ability to delegate.
- Language competence: written and oral skills in German and English; language awareness; ability to communicate with experts and laypersons;
- Self-competences: ability to motivate oneself, ability to show personal demeanour and to control one's self-portrayal; ability to make decisions, ability to incorporate innovations; readiness to continuous further education.
- Value orientation: ability to accept the plurality of values and to stand in for one's own value orientation with arguments; ability to perceive and understand cultural differences in the area of ethnics and religion; sensitiveness towards gender disparity.
- Ability to think in a scientific way, e.g. in an analytic, logical, cross-linking, problem-solving, or synthetic way;

#### **(4) Subject specific and subject didactic competences**

##### (4a) Subject of Biology and Environmental Protection

###### i) Subject-specific competences

The Secondary School Teacher Accreditation Programme for the subject of Biology and Environmental Protection aims at acquiring the subject-specific following competences:

- Basics principles of the systematics of the subjects of botany, zoology and earth science;
- Knowledge of the morphology of the native fauna and flora, complemented by biological, ecological, ethological and geo-scientific correlations;
- Knowledge of the cell as the basic module of life and the base for the evolution of organisms;
- Understanding of physiological processes on cell, organ and organism level, also under consideration of technical usability;
- Basic ecological knowledge as an instrument for a well-based environmental education to cross-link animate and inanimate nature;
- Basic knowledge of genetics as a precondition for understanding molecular and evolutionary biology;
- Basic knowledge of human biology also considering the aspect of sexual and health education;

###### ii) Subject-didactic competences

The Secondary School Teacher Accreditation Programme for the subject of Biology and Environmental Protection aims at acquiring the following subject-didactic competences:

- Skills for using the microscope and other laboratory equipment for making demonstrative experiments and experiments in class.
- Planning and designing of outdoor natural-scientific works.

- Ability to arouse the pupils' interest in biology, environmental protection and nature and to promote independent, explorative learning.

#### (4b) Subject of Chemistry

##### i) Subject-specific competences

The Secondary School Teacher Accreditation Programme for the subject of Chemistry aims at acquiring the following subject-specific competences:

- Knowledge of inorganic chemistry, analytic chemistry, physical chemistry, theoretical chemistry, organic chemistry and bio-chemistry;
- Understanding and presenting the contents of the syllabus of Chemistry at general and vocational secondary schools;
- Ability to deduce the general principles of chemistry from observing experiments and to use these principles for explaining observations made in everyday life;
- Experience in using chemical substances and a command of chemical working techniques to allow for a responsible use of chemical substances in class;
- Critical assessment of the significance of chemical products for living standard, but also of the risks these products pose for humans and the environment;
- Ability to learn about new developments in the field of chemistry through independent study of literature;
- Documentation of the results of experiments in a scientific way;

##### ii) Subject-didactic competences

The subject-didactic education of the Secondary School Teacher Accreditation Programme for the subject of Chemistry aims at

- providing the graduates with the ability to introduce pupils to the methods of acquiring knowledge especially in the field of chemistry by selecting suitable experiments and observations,
- to show the pupils how chemistry links to medicine, pharmacy, biology and ecology,
- and to introduce pupils to a natural, scientific way of thinking.

#### (4c) Subject of Geography and Economics

##### i) Subject-specific competences

The Secondary School Teacher Accreditation Programme for the subject of Geography and Economics aims at acquiring the following general competences:

- Knowledge of geographic methods
- Exactness and consistency of thinking
- The use of written and oral language with precision
- To use suitable sources of information and to get the required information well-targeted, to critically assess it and to acquire the contents required for class
- Great importance is attached on the reflection of basic values and norms and on questions of responsibility for using scientific findings.

The following competences in the following areas are promoted in future teachers:

- Spatial orientation at different scale levels
- Topographic orientation grids
- Making and critical interpretation of maps and map-like depictions
- Geo-ecological outline of the earth
- Use and problems of the natural environment
- Processes and system connections in natural and cultural spaces
- Social theory and processes of the social world, in special consideration of the spatial differentiation
- Social systems and action theoretical approaches
- Economic and social policy
- Population, settlement, land use planning
- Basic economic systems, theories and models
- Micro- and macro-economics
- Regional differentiation of economy

ii) Subject-didactic competences

- Ability to critically interpret and implement the respective syllabus in Austrian schools
- Ability to critically and pragmatically choose learning contents in consideration of the pupils
- Ability to present subject-didactic reasons for choosing learning contents
- Ability to assess and to use subject-relevant media
- Ability to choose and realise projects and to give reasons for the choice and to plan subject-specific excursions, field trips and other active ways of instruction
- Ability to recognize and implement the multi-disciplinary basics of the subject
- Ability and skills to interpret and design subject-relevant maps and other graphic depictions and
- Skills to use EDV and GIS in class.

(4d) Subject of Mathematics

i) Subject-specific competences

Graduates of the Teacher Accreditation Programme for the subject of Mathematics should be able

- explain the parts of mathematics that are taught in general secondary and vocational secondary schools in a simple and understandable way and to motivate the pupils - precondition is to have a sound knowledge of and to master these parts and to know their scientific background and contexts.
- to use computers and mathematical software in class.
- to awaken the pupils' interest for professions that require a profound knowledge of mathematics and to make connections to other teaching subjects. For that purpose knowledge of important uses of mathematics is required.
- to assess the quality of school books and other instruments (e.g. software) and to use them critically.
- to interpret the syllabus critically and to independently acquire knowledge of new syllabus contents if required.
- to inform on the historic development and the importance of mathematics for society.

## ii) Subject-didactic competences

- Students of the Secondary School Teacher Accreditation Programme should get to know basic theories for planning and evaluating mathematics classes. They should acquire the ability to use these theories and models in class.

## (4e) Subject of Physics

### i) Subject-specific competences

Graduates of the Teacher Accreditation Programme for the subject of Physics should acquire basic theoretical knowledge:

- of the physical sub-disciplines of mechanics, electricity and magnetism, optics, heat, atomic, molecular and solid body physics, the general theory of relativity, astrophysics and cosmology - main focus is not on the number of known facts, but on the ability to overlook, understand and connect physics to other fields of knowledge;
- of fields that are closely related to physics and where a basic understanding of physical principles leads to a deeper understanding, thus meteorology and geophysics, biology, chemistry and in physical medicine;
- of the history of physics
- of the technical use of physical findings and an ability to demonstrate the related, problematic effects on society;

### ii) Subject-didactic competences

Graduates of the Secondary School Teacher Accreditation Programme for the subject of Physics should be able

- to depict the field of physics not as a large sum of unconnected facts, but to continuously encourage pupils to note the connections and links to other contents and concepts.
- of introducing pupils to the "method of physics" (in a way suitable for pupils): understanding complex situations with the help of simple models without missing things that are essential to the process;
- to introduce pupils to the initially surprising fact that models of physics are made of suitable mathematical components;
- to assess the "method of physics" and its possibilities and limits and to compare it to other methods of other sciences;
- of presenting the "method of physics" for gaining knowledge as a generally usable, very successful method of a rational approach towards the world and to encourage pupils to use this approach and to become critically thinking citizens;
- consider the world of the pupils for presenting physical contents and to use interesting in-class experiments for impressive classes.

## (4f) Subject of Computer Science and Computer Science Management:

### i) Subject-specific competences

Graduates of the Secondary School Teacher Accreditation Programme for the subject of Computer Science and Computer Science Management should be able to

- explain the parts of computer science that are taught in general secondary and vocational secondary schools in a simple and understandable way and to motivate the pupils - precondition

is to have a sound knowledge of and to master these parts and to know their scientific background and contexts.

- communicate to pupils the practical uses of computer science for work and for everyday life;
- assess the quality of school books and other instruments used in class (software etc.) and to use these critically.
- interpret the syllabus critically and to acquire knowledge of new syllabus content independently if required.
- inform on the importance of computer science and information technology for society as well as on legal aspects of data use.
- to act as informatics expert in the school (e.g. advise for buying hard and software, installation of software, network administration);

## ii) Subject-didactic competences

Graduates of the Secondary School Teacher Programme for the subject of Computer Science and Computer Science Management should

- know basic theories and models for planning, implementing and evaluating computer science classes.
- acquire the ability to use these theories and models in class.
- acquire a broad repertoire of teaching methods.
- be able to assess the didactic quality of school books and other instruments (software etc.) and use them critically.

# **Curriculum of the Secondary School Teacher Accreditation Programme for the subjects of Biology and Environmental Protection, Chemistry, Geography and Economics, Computer Science and Computer Science Management, Mathematics and Physics**

## **Contents of the curriculum**

- §1. Organisation of the Secondary School Teacher Accreditation Programme (structure, duration, study parts, completion of studies, orientation period)
- §2. ECTS credits
- §3. Examination regulations
- §4. School teaching practice
- §5. Pedagogical education
- §6. Subject-specific and subject-didactic education in the single subjects
- §7. Legal validity and transitional regulations

### **§1. Organisation of the Secondary School Teacher Accreditation Programme (structure, duration, study parts, completion of studies, orientation period)**

- (1) The Secondary School Teacher Accreditation Programme comprises nine semesters and is divided into two parts of study. The first part of studies consists of four semesters, the second part of five semesters.
- (2) The Secondary School Teacher Accreditation Programme includes subject-specific, subject-didactic and pedagogical training in two subjects and school teaching practice. On admission to the Secondary School Teacher Accreditation Programme students have to announce their two subjects chosen.

The subjects of Biology and Environmental Protection, Chemistry, Geography and Economics, Computer Science and Computer Science Management, Mathematics and Physics can be combined with each other or with a subject offered at the Faculty of Humanities or the Faculty of Catholic Theology of the University of Innsbruck or with a subject offered at another university or arts university.
- (3) The Secondary School Teacher Accreditation Programme for the subject of Biology and Environmental Protections covers 100 semester hours (SSt), 10 of which are elective courses, in the subject of Chemistry 109 semester hours, 11 of which are elective courses and in the subjects of Geography and Economics, Mathematics and Physics 90 semester hours, 9 of which are elective courses. The Secondary School Teacher Accreditation Programme for the subject of Computer Science and Computer Science Management covers 81 semester hours.
- (4) The school teaching practice has a duration of six weeks for each subjects (= 120 hours = 8 semester hours).
- (5) Elective courses can be freely chosen from the offers of all approved universities home and abroad.
- (6) The first part of studies is completed with the first diploma examination; the second part of studies is completed with the second diploma examination.

- (7) If the theme of the diploma thesis is chosen from one of the subjects of Biology and Environmental Protection, Chemistry, Geography and Economics, Computer Science and Computer Science Management, Mathematics or Physics, then the academic degree “Magistra der Naturwissenschaften” or “Magister der Naturwissenschaften” is awarded.

### **§1a Introductory study and orientation phase**

(1) The introductory study and orientation phase lasts one semester (30 ECTS credits) and aims at giving the student an overview of the most important contents of the respective studies and the further course of the respective studies to make an objective personal review of the choice of studies possible.

(2) Within the scope of the introductory study and orientation phase the following three course examinations that may be repeated twice have to be passed:

One each in the two teaching subjects (corresponding to the list below) and one in the orientation unit of the pedagogical training, SL 2, 2 ECTS credits.

<b>Subject</b>	<b>Course</b>	<b>Type</b>	<b>SSt</b>	<b>ECTS</b>
Biology and Environmental Protection	Organisation and Diversity of Animals	VO	2	2.5
Chemistry	Experimental Lecture General Chemistry	VO	5	6
Geography	Basics of Physical Environments	VO	4	4
Computer Science and Computer Science Management	Introduction to Practical Computer Science	VO	2	3
Mathematics	Linear Algebra and Analytic Geometry I	SL	1	2.5
Physics	Physics Ia: Mechanics	VO	2	3

### **§2. ECTS credits**

- (1) Of each teaching subject, 15 ECTS credits are allocated to the diploma thesis and 7 ECTS credits to the school teaching practice.
- (2) 1 ECTS credit is allocated to each semester hour passed in the examination subject of Pedagogical Education within the scope of the teaching subjects of Biology and Environmental Protection, Chemistry, Geography and Economics, Computer Science and Computer Science Management, Mathematics or Physics.
- (3) Elective courses in the subjects of Biology and Environmental Protection, Chemistry, Geography and Economics, Mathematics or Physics amount to 6 ECTS credits altogether. The allocation of the remaining ECTS credits is outlined in §6.



### §3. Examination regulations

- (1) For each teaching subject the examination subject of Pedagogical Education, the courses of which are regulated in §5, is included in both parts of the studies. Further examination subjects of each teaching subject and their allocation to the study parts are regulated in §6.
- (2) Course examinations for lectures (VO), lecture tutorials (VU) and courses of the orientation phase (SL) are either written or oral examinations. Compulsory attendance may be required for courses of the orientation period (SL).
- (3) Proseminars (PS), seminars (SE), practical courses (PR), tutorials (UE), excursions (EU, EB), interdisciplinary projects (IP) and project studies (PJ) are courses with continuous performance assessment. The following regulations apply to the assessment of these courses in the respective subjects:
  - a) Biology and Environmental Protection: The assessment of a presentation and a written seminar paper are decisive for successful participation. Tutorials are assessed on the basis of regular written or oral contributions of the participants and possibly by a final written or oral examination. Excursions are assessed on the basis of a written excursion report.
  - b) Chemistry, Geography and Economics: In seminars written and oral contributions of the participants are assessed on the basis of their subject-specific and methodological value and the quality of their presentation. Tutorials are assessed on the basis of regular contributions and the ability to solve specific tasks independently. Excursions are assessed on the basis of a written excursion report.
  - c) Computer Science and Computer Science Management, Mathematics, Physics: An examination has to be passed for each lecture. The course lecturer announces at the start of the course if the examination is an oral or written one. Seminars are assessed on the basis of a presentation and a written seminar paper. For all other courses with continuous performance assessment the assessment criteria are announced by the course lecturer at the beginning of the course.
- (4) The first part of the first diploma examination is passed with the course examinations of all compulsory courses for the first part of studies as listed in the curriculum. The second part of the first diploma examination is an examination in front of the examination board that covers all contents required for teaching in class that are covered by the courses of the first part of studies. The examination board sets up a course catalogue for these contents and students are offered a conversation class to prepare for the examination. Precondition for registering for this examination is the positive conclusion of the first part of the diploma examination.
- (5) In the subject of Geography and Economics course examinations of the second part of studies can only be passed after conclusion of the first diploma examination of this subject. In all other subjects, course examinations of the second part of studies can already be passed in the first part of studies. Registering for seminars though requires the conclusion of the first diploma examination of the respective subject. In each subject a diploma thesis may only be started after the conclusion of the first diploma examination.
- (6) The first part of the second diploma examination is passed with the course examinations of all required courses for the second part of studies.
- (7) The theme of the diploma thesis must be related to one of the two subjects including subject didactics. In any case there must be a clear relation to the subject-didactics of one of the two subjects.

- (8) The second part of the second diploma thesis is passed with an examination in front of the examination board for each subject. Students must demonstrate their subject-specific and subject-didactic abilities required for teaching at school. Precondition for registering for the examination is the positive conclusion of the first part of the second diploma examination and the positive assessment of the diploma thesis. The overall assessment of the second diploma examination is based on the regulations of §45 Para 3 of the University Act (UniStG).
- (9) Examinations in the examination subject of Pedagogical Education and the school teaching practice are course examinations. In consideration of the conclusion of the studies, students have to write an examination paper in the form of a portfolio alongside the courses that documents all learning and training steps. The courses of the examination subject of Pedagogical Education and the final period of the school teaching practice are assessed based on a 1-to-5 performance scale. The courses of the school teaching practice with the exception of the final period are assessed on a 1-to-2 performance scale.
- (10) Geography and Economics: For participation in the subject-specific and subject-didactic courses listed below, positive completion of other courses is required additionally to §3 (5) to ensure sufficient prior knowledge:  
Admission regulations for courses in the first part of studies:
- Proseminar in Human Geography: positive completion of the courses “Men and Environment”, “Fundamentals of Human Geography I”, “Fundamentals of Human Geography II”
  - Proseminar in Physical Geography: positive completion of “Men and Environment”, “Basics of Physical Environments”
  - Excursions in Regional Geography: positive completion of “Tyrol, Alps, Europe”
  - Economic tutorials: positive assessment of the courses “Fundamentals of Economics and Regional Policy”, “Introduction to Management and Economics”
- Admission regulations for courses in the second part of studies:
- Seminar in General Geography: positive assessment of the courses “Basics of Research on Mountain Regions”, “Comparative Geography of Mountain Regions”
  - Seminar in Regional Geography: positive assessment of the courses “Regional Geography”, “Regional Aspects of Global Change”
  - Excursion: positive assessment of the Seminar in Regional Geography
  - Seminar in Economics/Economic Geography: positive assessment of the courses “Detailed Aspects of Economics”, “Detailed Aspects of Business Studies” (cancelled: “International Economics”)
  - Seminar in Subject Didactics: “Practical Lesson Planning and Presentation 1”, “Practical Lesson Planning and Presentation II”

#### **§4. School teaching practice**

- (1) The school teaching practice has a duration of six weeks for every subjects (=120 hours = 8 semester hours) and consist of three parts:
- Orientation period (one semester hour).
  - Formation period (six semester hours).
  - Final period (one semester hour).

## §5. Pedagogical education

- (1) The number of semester hours that have to be passed in pedagogical education is the sum of the semester hours allocated to pedagogical education for the two teaching subjects. The pedagogical education comprises 8 semester hours for each subject and consists of three parts:
  - The orientation phase covers two semester hours of compulsory courses that are allocated to the first part of studies.
  - The formation period comprises three semester hours of compulsory courses and two semester hours of elective courses and is allocated to the second part of studies.
  - The final period consist of one semester hour of compulsory courses and is allocated to the second part of studies.
- (2) Identical courses cannot be allocated for different teaching subjects.
- (3) The courses of the orientation period are:
  - a) Orientation course, SL2, 2 ECTS credits.

Study orientation courses (SL) give an overview of major aspects of the studies and their future course and create a basis for making an objective personal review of one's choice of studies.

Attendance is obligatory for the study orientation course. There is a single examination at the end of the course. Maximum number of participants: 20.
  - b) Reflection Course  
Form: two-hour course in groups of 20 students at most that is cooperatively headed. Cooperation with general and vocational secondary school teachers is pursued.
- (4) The compulsory courses of the formation period are:
  - a) Basics of Learning and Teaching  
Form: two-hour course in groups of 40 students at most.
  - b) Basic Competences 1  
Precondition: completion of Basics of Learning and Teaching  
Form: two-hour course with a high degree of student responsibility for contents and assessment
  - c) Basic Competences 2  
Precondition: completion of Basic Competences I  
Form: two-hour course with a strong process-like and interactive character in groups of 12 students at most.
- (5) The course of the final phase is:

Final Assessment Course

Form: two-hour course with assessment centre, portfolio, single and group presentation elements in groups of 12 students at the most.
- (6) The optional modules are contextually-related courses of a total of 4 semester hours that are dedicated a theme each. The allocation of the offered courses to optional modules is regulated by the Study Committee and announced in an appropriate way.

Optional modules can be chosen from the following themes:

  - a) Research Workshop School Development
  - b) School – Economy/Society/Internationality

- c) Pedagogical Concepts
- d) Advice
- e) Adult Education/Further Education
- f) Information and Communication Technology
- g) Reinforcement of themes of the formation

## § 6. Subject-specific and subject-didactic education in the respective teaching subjects

### (1) SUBJECT OF BIOLOGY AND ENVIRONMENTAL PROTECTION

1 <sup>st</sup> Part of studies	Type	SSt	ECTS
<b>Examination subject of Botany</b>		<b>10</b>	<b>11</b>
Anatomy and Morphology of Plants for Students of the Secondary School Teacher Accreditation Programme	VO	1	1.5
Anatomy and Morphology of Plants for Students of the Secondary School Teacher Accreditation Programme	UE	2	1.5
Plant Physiology for Students of the Secondary School Teacher Accreditation Programme	VO	2	2.5
Systematics and Evolution of Plants for Students of the Secondary School Teacher Accreditation Programme	VO	2	2.5
Plant Taxonomy and Identification (Cryptogams and Phanerogams): Practical Course for Students of the Secondary School Teacher Accreditation Programme	UE	3	3
<b>Examination subject of Zoology</b>		<b>10</b>	<b>13.5</b>
Organisation and Diversity of Animals for Students of the Secondary School Teacher Accreditation Programme	VO	2	2.5
Bauplan of Unicellular and Metazoan Eukaryotes	UE	3	4.5
Morphological-Zoological Tutorials	UE	2	2
Animal Physiology	VO	3	4.5
<b>Examination subject of General Biology</b>		<b>11</b>	<b>14.5</b>
Chemistry and Molecular Biology for Students of the Secondary School Teacher Accreditation Programme	VO	4	4
Cell Biology	VO	2	3
Development and Evolution I	VO	2	3
Classic and Molecular Genetics for Students of the Secondary School Teacher Accreditation Programme	VO	3	4.5
<b>Examination subject of Human Biology</b>		<b>4</b>	<b>4</b>
Nutrition	PS	2	2
Human Ecology	VO	2	2
<b>Examination subject of Earth Science</b>		<b>4</b>	<b>4</b>
Internal Structure of the Earth	VU	2	2
Evolution and Dynamics of the Earth	VU	2	2

<b>Examination subject of Ecology</b>		<b>4</b>	<b>4</b>
Zoological and Botanical Excursions	EX	2	1
Introduction to Ecology	VO	2	3
<b>1<sup>st</sup> Diploma examination in front of the examination board</b>			<b>1.5</b>
<b>Overall 1<sup>st</sup> part of studies</b>		<b>43</b>	<b>52.5</b>

<b>2<sup>nd</sup> Part of studies</b>	<b>Type</b>	<b>SSt</b>	<b>ECTS</b>
<b>Examination subject of Botany</b>		<b>4</b>	<b>4</b>
Ecophysiological Tutorial for Students of the Secondary School Teacher Accreditation Programme	UE	1	1
Vegetation of Central Europe for Students of the Secondary School Teacher Accreditation Programme	VU	2	2
Cash Crops Students of the Secondary School Teacher Accreditation Programme	VO	1	1
<b>Examination subject of Zoology</b>		<b>3</b>	<b>4</b>
Ethology	VO	1	1.5
Information and Communication in Organisms for Students of the Secondary School Teacher Accreditation Programme	VO	2	2.5
<b>Examination subject of General Biology</b>		<b>3</b>	<b>4.5</b>
Introduction to Microbiology	VO	2	3
Basic Techniques in Microbiology (VO1) or Toxicology (VO1)	VO	1	1.5
<b>Examination subject of Human Biology</b>		<b>3</b>	<b>4</b>
Immunobiology I	VO	1	1.5
Immunobiology II	VO	1	1.5
Psychosomatics	PS	1	1
<b>Examination subject of Ecology</b>		<b>5</b>	<b>5.5</b>
Structure and Function of Aquatic and Terrestrial Ecosystems	VO	2	3
Biodiversity of Native Habitats	SE	2	2
Biodiversity of Native Habitats	EX	1	0.5
<b>Examination subject of Subject Didactics</b>		<b>21</b>	<b>23</b>
Didactics and Methodology of Biology Teaching	VO	2	2
Experiments in Botany for Students of the Secondary School Teacher Accreditation Programme	UE	2	2
Zoological Experiments for Students of the Secondary School Teacher Accreditation Programme	UE	2	2
Molecular-Biological Experiments for Students of the Secondary School Teacher Accreditation Programme	UE	2	2
Microbiological Experiments for Students of the Secondary School Teacher Accreditation Programme	UE	2	2
Teaching Biology in Theory and Practice <i>or</i> Agriculture and School <i>or</i> Key Topics for Biology Lessons	PJ	2	2

Outdoor Science Education	VU	2	2
Didactics of Health Education	PS	2	2
Earth Sciences in the Field	UE	2	2
Scientific Learning	PJ	3	5
<b>2<sup>nd</sup> Diploma examination in front of the examination board</b>			<b>1.5</b>
<b>Overall 2<sup>nd</sup> part of studies</b>		<b>39</b>	<b>46.5</b>
<b>Elective courses</b>		<b>10</b>	<b>6</b>
To prepare for the course “Scientific Learning” and for the diploma thesis it is recommended to attend the course “Quantitative Techniques in Ecology” VU2 (3 ECTS credits) from the BACurriculum (PM4b) as elective course.			
<b>Overall 1<sup>st</sup> and 2<sup>nd</sup> part of studies</b>		<b>92</b>	<b>105</b>

### Types of courses:

- (1) A lecture (VO) introduces to the main themes and methods of a subject in a didactic way as a basis for scientific examination. A lecture aims at introducing to the most important facts and doctrines of the area.
- (2) In tutorials (UE) independent work for gaining skills and practical examination of scientific contents are promoted. They also provide a basis for furthering knowledge of a theme. A tutorial can also take place outside of university and its institutions or outdoors.
- (3) A lecture-tutorial (VU) is an integrated course that connects lecture with tutorial. The targets of lectures and tutorials are connected.
- (4) Seminars (SE) are focused on detailed scientific discussion of contents and methods of an area of the subject. Students are expected to make presentations, hold discussions and write papers. They are closely connected to the educational goals of the subject.
- (5) Excursions (EX) are focused on practical tasks and problems of the subject area and take place outside of university and its institutions.
- (6) Project studies (PJ) are focused on actual syllabus contents. Subject-didactic methods are presented in presentations or project papers.

## (2) SUBJECT OF CHEMISTRY

### 1<sup>st</sup> Part of studies

	Type	SSt	ECTS
<b>Mathematics and Physics (4 semester hours)</b>			
▪ Chemical Calculations	VO	2	3
▪ Physics for Students of Pharmacy and Biology	VO	2	3
<b>Examination subject of General and Inorganic Chemistry (16 semester hours)</b>			
▪ Experimental Lecture General Chemistry	VO	5	6
▪ Chemistry in Aqueous Solution	VO	1	1.5
▪ General Chemistry Laboratory Course	UE	5	2.5
▪ Chemistry in Aqueous Solution Laboratory Course	UE	3	1.5
▪ Experimental Lecture Main Group Chemistry	VO	2	2.5
<b>Examination subject Analytic Chemistry (5 semester hours)</b>			
▪ Analytical Chemistry I	VO	3	5
▪ Analytical Chemistry II	VO	2	3.5
<b>Examination subject of Organic Chemistry (18 semester hours)</b>			
▪ Organic Chemistry I	VO	4	5
▪ Preparation Techniques in Organic Chemistry	VO	2	2.5
▪ Laboratory Course in Organic Chemistry	UE	6	3
▪ Organic Chemistry II	VO	2	2.5
▪ Spectroscopy	VO	2	2.5
▪ Technical and Applied Organic Chemistry	VO	2	3
1 <sup>st</sup> Diploma Examination in front of the Examination Board			1.5
		<b>43</b>	<b>48.5</b>

### 2<sup>nd</sup> Part of studies

	Type	SSt	ECTS
<b>Examination subject of Physical Chemistry (11 semester hours)</b>			
▪ Physical Chemistry I	VO	3	4
▪ Exercises in Physical Chemistry I	PS	1	1
▪ Physical Chemistry II	VO	3	4
▪ Laboratory Course in Physical Chemistry	UE	4	2
<b>Examination subject of Analytical Chemistry (9 semester hours)</b>			
▪ Quantitative Analytical Chemistry - Basic Practical Course	UE	2	1.5
▪ Practical Course on Instrumental Analysis	UE	2	1.5
▪ Advanced Practical Course in Instrumental Analysis	UE	3	1.5
▪ Food Analysis	VO	1	1.5
▪ Environmental Analysis: Water, Ground and Air Analysis	VO	1	1.5
<b>Examination subject of Biochemistry (7 semester hours)</b>			
▪ Biochemistry I	VO	3	5
▪ Laboratory Course in Biochemistry	UE	4	2.5

<b>Examination subject Theoretical Chemistry (2 semester hours)</b>			
▪ Theoretical Chemistry Laboratory	UE	2	1
<b>Examination subject of General Chemistry (2 semester hours)</b>			
▪ Environmental Chemistry	VO	1	1.5
▪ Laboratory Safety	VO	1	1.5
<b>Examination subject of Macromolecular Chemistry (2 semester hours)</b>			
▪ Macromolecular Chemistry	VO	2	3
<b>Examination subject of Subject Didactics (14 semester hours)</b>			
▪ Methods of Teaching Chemistry	VO	2	3
▪ Theory of Experiments in Chemical Education	VO	2	3
▪ Laboratory Tutorial for Experiments in Chemical Education	UE	6	4
▪ Seminar for Chemical Education I	SE	2	3
▪ Seminar for Chemical Education II	SE	2	3
2. Diploma Exam in front of the Examination Board			1.5
		<b>47</b>	<b>50.5</b>
<b>Elective courses</b>			
		<b>SSt</b>	<b>ECTS</b>
Elective Courses		<b>11</b>	<b>6</b>

### Types of courses:

- (1) A lecture (VO) introduces to the main themes and methods of a subject.
- (2) A lecture-tutorial (VU) introduces to the main themes and methods of a subject and gives additionally instructions for independent literature study and solving of chemical problems.
- (3) Seminars (SE) for students of the Secondary School Teacher Accreditation Programme are focused on independent study of literature, on learning how to present findings in chemistry in a didactical way and on discussion of subject-specific and subject-didactic aspects.
- (4) A tutorial (UE) is a course that aims at acquiring experimental experience.



### (3) SUBJECT OF GEOGRAPHY AND ECONOMICS

#### 1<sup>st</sup> Part of studies

<b>Examination subject of Subject-Didactics (4 semester hours)</b>	<b>Type</b>	<b>SSt</b>	<b>ECTS</b>
Basics of Teaching	VU	2	2
Working with Thematic Maps in School	UE	1	0.5
Geography and School	VO	1	1.5
<b>Examination subject of Geographical Working Methods (4 semester hours)</b>			
Scientific Working Techniques	VU	2	3.5
Fundamentals of Cartography	VO	2	3.5
<b>Examination subject of General Geography (16 semester hours)</b>			
Men and Environment	VO	4	7.5
Basics of Physical Environments	VO	4	4
Fundamentals of Human Geography 1	VO	2	4
Fundamentals of Human Geography 2	VO	2	3.5
Proseminar in Human Geography	PS	2	4
Proseminar in Physical Geography	PS	2	3.5
<b>Examination subject of Regional Geography (4 semester hours)</b>			
The Tyrol, Alps, Europe	VO	2	4
Excursions in Regional Geography	EU	2	2
<b>Examination subject of Economics (6 semester hours)</b>			
Fundamentals of Economics and Regional Policy	VO	2	3.5
Introduction to Management and Economics	VO	2	2
Exercises in Economics	UE	2	1.5
1 <sup>st</sup> Diploma examination in front of the examination board			1.5
		<b>34</b>	<b>52</b>

## 2<sup>nd</sup> Part of studies:

<b>Examination subject of General Geography (10 semester hours)</b>	<b>Type</b>	<b>SSt</b>	<b>ECTS</b>
Basics of Research on Mountain Regions	VO	2	3.5
Fundamentals of Global Change	VO	2	4
Excursion on Global Change	EU	2	3.5
Special Topics	VO	2	2
Seminar in General Geography	SE	2	2
<b>Examination subject of Regional Geography (12 semester hours)</b>			
Comparative Geography of Mountain Regions	VO	2	4
Regional Geography	VO	2	4
Regional Aspects of Global Change	VO	2	3.5
Seminar in Regional Geography	SE	2	2
Excursion	EU	4	3
<b>Examination subject of Economics (6 semester hours)</b>			
Detailed Aspects of Economics	VO	2	2
Detailed Aspects of Business Studies	VO	2	2
Seminar in Economics/Economic Geography	SE	2	2
Internship of a duration of 4 weeks			
<b>Examination subject of Subject Didactics (8 semester hours)</b>			
Seminar in Didactics of Geography	SE	2	2
Theoretical Basis of Teaching Geography and Economics	VO	2	2
Practical Lesson Planning and Presentation 1	VU	2	2
Practical Lesson Planning and Presentation 2	VU	2	2
2 <sup>nd</sup> Diploma examination in front of the examination board			1.5
		<b>36</b>	<b>47</b>

### Elective courses

	<b>SSt</b>	<b>ECTS</b>
Elective courses	12	6

### Types of courses:

- (1) A lecture (VO) introduces to the main themes and methods of a subject in a didactic way as a basis for scientific examination. A lecture aims at introducing to the most important facts and doctrines of the area, reports on specialized research areas and the latest developments in science.
- (2) Tutorials (UE) focus on exemplary problems of the subject area. Discussions, case demonstrations, short presentations and reviewing of homework are methods of assessment. Tutorials are focused on the targets of the Secondary School Teacher Accreditation Programme and complement lectures with practical exercises and concrete tasks. They aim at furthering the contents and the use of the methodology.

- (3) A lecture-tutorial (VU) is an integrated course that combines parts of lectures with parts of tutorials. The practical part deals with actual tasks and their solutions corresponding to the practical didactical targets of the Secondary School Teacher Training Programme.
- (4) Excursion-tutorials (EU) focus on presenting integrative-synthetic interrelations in the outdoors in a didactical way. Concrete tasks and specific problems of the visited regions are dealt with and methods for observing the terrain in a geographic way and for data collection are taught.
- (5) A Proseminar (PS) is an introductory seminar. They are focused on the fundamentals of scientific working, introduce to specialist literature and the problems of the subject area in a methodical way. Presentations, project papers that are complemented by discussions and presentations are common assessment tools.
- (6) Seminars (SE) are courses for advanced students (2<sup>nd</sup> part of studies). They aim at scientific discussion, exercising academic discourse and are closely related to the educational targets of the subject.

#### (4) SUBJECT OF COMPUTER SCIENCE AND COMPUTER SCIENCE MANAGEMENT

##### 1<sup>st</sup> Part of studies

	Type	SSt	ECTS
<b>Examination subject of Introduction to Computer Science</b>		<b>16</b>	<b>25</b>
▪ Introduction to Programming	VO	3	4.5
▪ Introduction to Programming	PS	2	3
▪ Introduction to Practical Computer Science	VO	2	3
▪ Introduction to Practical Computer Science	SL	1	2
▪ Introduction to Practical Computer Science	VO	2	3
▪ Introduction to Practical Computer Science	PS	1	2
▪ Algorithms and Data Structures	VO	3	4.5
▪ Algorithms and Data Structures	PS	2	3
<b>Examination subject of Theoretical Computer Science</b>		<b>8</b>	<b>12.5</b>
▪ Introduction to Theoretical Computer Science	VO	2	3
▪ Introduction to Theoretical Computer Science	PS	1	2
▪ Discrete Mathematics	VO	3	4.5
▪ Discrete Mathematics	PS	2	3
1 <sup>st</sup> Diploma examination in front of the examination board			<b>1.5</b>
<b>Overall</b>		<b>24</b>	<b>39</b>

##### 2<sup>nd</sup> Part of studies

	Type	SSt	ECTS
<b>Examination subject of Practical Computer Science</b>		<b>17</b>	<b>25</b>
▪ Programming Methodology	VO	3	4.5
▪ Programming Methodology	PS	2	3
▪ Database Systems	VO	3	4.5
▪ Database Systems	PS	2	3
▪ Operating Systems	VO	3	4.5
▪ Operating Systems	PS	2	3
▪ Introduction to Scientific Working	PS	2	2.5
<b>Examination subject of Theoretical Computer Science</b>		<b>5</b>	<b>7.5</b>
▪ Logic	VO	3	4.5
▪ Logic	PS	2	3
<b>Examination subject of Subject Didactics</b>		<b>14</b>	<b>17</b>
▪ Introduction to Didactics of Mathematics and Computer Science	VO	2	2
▪ Computer Science Management	PR	3	3
▪ Methods of Computer Science Education	VO	2	3
▪ Methods of Computer Science Education	PS	1	2
▪ Seminar in Subject Didactics of Computer Science	SE	2	3
▪ Application Systems in Education	PR	2	2
▪ Programming in Education	PR	2	2

<b>Examination subject of Advanced Computer Science</b>		<b>13</b>	<b>15</b>
▪ Courses covering a total of 13 semester hours and at least 15 ECTS credits of the compulsory or optional modules of the BA-studies of Informatics.		13	15
2 <sup>nd</sup> Diploma examination in front of the examination board			<b>1.5</b>
<b>Overall</b>		<b>49</b>	<b>66</b>

### Types of courses

(1) Lectures (VO)

A lecture introduces to the terms, results and methods of the respective subject area in a didactical way. It aims at arousing interest and to provide well-structured knowledge and a basic understanding of the area in a relatively short time.

(2) Proseminars (PS)

Proseminars are often closely related to the contents of a lecture. Students get tasks, the solutions of which are discussed in the proseminars. If the proseminar is related to a lecture, the contents of the lecture are repeated and reinforced. Proseminars aim at exercising independent solving of problems, methodical working, presenting of subject-specific contents and scientific furthering of learned contents.

They are courses with continuous performance assessment. Maximum number of participants: for proseminars that are jointly attended by BA-students of Computer Science the number corresponds to what is given there; for all other proseminars: 25

(3) Practical Courses (PR)

Practical courses aim at acquiring skills through independent work and promote the practical examination of scientific contents. They are courses with continuous performance assessment. Maximum number of participants: 20

(4) Seminars (SE)

Seminars (SE) are focused on detailed scientific discussion of contents and methods of an area of the subject. Presentations, papers and discussions are common tools of assessment. Students learn to present scientific results in writing (seminar paper) and orally (presentation).

They are courses with continuous performance assessment. Maximum number of participants: 15

### Admission procedures for the admission to courses with a limited number of participants

The following criteria are considered for allocating places for courses with a limited number of participants:

1. Students, the study time of who would be prolonged without admission to the course, are given priority for admission.
2. If the criteria in no. 1 is not sufficient for regulating admission to a course, students, for whom it is mandatory to pass the course, come first, and students that attend the course as elective course second.
3. Should the criteria in no. 1 and no. 2 not suffice for regulating the admission to a course, the available places are drawn.

**(5) SUBJECT OF MATHEMATICS:****1<sup>st</sup> Part of studies**

	<b>Type</b>	<b>SSt</b>	<b>ECTS</b>
<b>Examination subject of Linear Algebra and Geometry</b>		<b>11</b>	<b>16.5</b>
▪ Linear Algebra 1	VO	3	4.5
▪ Linear Algebra and Analytical Geometry 1 (Part 2)	VO	1	1.5
▪ Linear Algebra and Analytical Geometry 1	SL	1	2.5
▪ Linear Algebra and Analytical Geometry 1	PS	1	1.5
▪ Linear Algebra and Analytical Geometry 1 for Students of the Secondary School Teacher Accreditation Programme	PR	2	2.5
▪ Linear Algebra and Analytic Geometry 2 for Students of the Secondary School Teacher Accreditation Programme	VO	2	3
▪ Linear Algebra and Analytic Geometry 2 for Students of the Secondary School Teacher Accreditation Programme	PS	1	1
<b>Examination subject of Analysis and Stochastics</b>		<b>18</b>	<b>27.5</b>
▪ Analysis 1	VO	4	6
▪ Analysis 1	SL	1	2.5
▪ Analysis 1	PS	1	1.5
▪ Analysis 1 for Students of the Secondary School Teacher Accreditation Programme	PR	2	2.5
▪ Analysis 2 for Students of the Secondary School Teacher Accreditation Programme	VO	2	3
▪ Analysis 2 for Students of the Secondary School Teacher Accreditation Programme	PS	2	2
If the second teaching subject is Physics, the following 5 courses of the BA-studies of Physics can be passed instead of the 6 listed above:			
▪ Analysis 1	VO	3	4.5
▪ Analysis 1	PS	2	2.5
▪ Analysis 1	PR	1	0.5
▪ Analysis 2	VO	4	6
▪ Analysis 2	PS	2	4
▪ Stochastics 1	VO	4	6
▪ Stochastics 1	PS	2	4
<b>Examination subject of Mathematical Methods</b>		<b>4</b>	<b>5</b>
▪ Introduction to Methods in Mathematics, Software and Programming	PS	3	4.5
▪ Characteristics of Teaching Mathematics	VO	1	0.5
1 <sup>st</sup> Diploma examination in front of the examination board			<b>1.5</b>
<b>Overall</b>		<b>33</b>	<b>50.5</b>

## 2<sup>nd</sup> Part of studies

	Type	SSt	ECTS
<b>Examination subject of Algebra and Geometry</b>		<b>18</b>	<b>23.5</b>
▪ Algebra 1	VO	3	4.5
▪ Algebra 1	PS	2	3
▪ Geometry for Students of the Secondary School Teacher Accreditation Programme	VO	2	2
▪ Geometry for Students of the Secondary School Teacher Accreditation Programme	PS	1	1
▪ Discrete Mathematics	VO	3	4.5
▪ Discrete Mathematics	PS	2	3
▪ If the other subject is Computer Science: instead of the two Discrete Mathematics courses other courses covering 5 semester hours and at least 7.5 ECTS credits can be chosen from the compulsory modules of the BA-programme of Technical Mathematics.			
▪ Algebra and Geometry at School	VO	2	2.5
▪ Algebra and Geometry at School	PS	1	1
▪ History of Mathematics	VO	2	2
<b>Examination subject of Analysis and Stochastics</b>		<b>12</b>	<b>13.5</b>
▪ Analysis 3 for Students of the Secondary School Teacher Accreditation Programme	VO	3	3
▪ Analysis 3 for Students of the Secondary School Teacher Accreditation Programme	PS	2	2
▪ Statistics	VO	2	3
▪ Statistics	PS	2	2
▪ Analysis and Stochastics at School	VO	2	2.5
▪ Analysis and Stochastics at School	PS	1	1
<b>Examination subject of Subject Didactics</b>		<b>10</b>	<b>10</b>
▪ Introduction to Didactics of Mathematics and Computer Science	VO	2	2
▪ Methods of Mathematical Education 1	VO	1	1
▪ Methods of Mathematical Education 1	PS	1	1
▪ Methods of Mathematical Education 2	VO	1	1
▪ Methods of Mathematical Education 2	PS	1	1
▪ Two of the following seminars (it is recommended to attend these seminars after having passed Algebra and Geometry at School or Analysis and Stochastics at School resp.):			
Algebra for Students of the Secondary School Teacher Accreditation Programme	SE	2	2
Analysis for Students of the Secondary School Teacher Accreditation Programme	SE	2	2
Geometry for Students of the Secondary School Teacher Accreditation Programme	SE	2	2
Stochastics for Students of the Secondary School Teacher Accreditation Programme	SE	2	2
or other seminars in Mathematics that are targeted at Students of the Secondary School Teacher Accreditation			

Programme.			
If Mathematics is combined with Computer Science: instead of “Introduction to the Didactics of Mathematics and Computer Science” another seminar can be chosen from the list above.			
2 <sup>nd</sup> Diploma examination in front of the examination board			<b>1.5</b>
<b>Overall</b>		<b>40</b>	<b>48.5</b>

### Elective courses

	<b>SSt</b>	<b>ECTS</b>
Elective courses	<b>9</b>	<b>6</b>

### Types of courses

(1) Lectures (VO)

A lecture introduces to the terms, results and methods of the respective subject area in a didactical way. It aims at arousing interest and to provide well-structured knowledge and a basic understanding of the area in a relatively short time.

(2) Proseminars (PS)

Proseminars are often closely related to the contents of a lecture. Students get tasks, the solutions of which are discussed in the proseminars. If the proseminar is related to a lecture, the contents of the lecture are repeated and reinforced. Proseminars aim at exercising independent solving of problems, methodical working, presenting of subject-specific contents and scientific furthering of learned contents.

They are courses with continuous performance assessment. Maximum number of participants: 25

(3) Practical Courses (PR)

Practical courses aim at acquiring skills through independent work and promote the practical examination of scientific contents. They are courses with continuous performance assessment. Maximum number of participants: 20

(4) Seminars (SE)

Seminars (SE) are focused on detailed scientific discussion of contents and methods of an area of the subject. Presentations, papers and discussions are common tools of assessment. Students learn to present scientific results in writing (seminar paper) and orally (presentation). They are courses with continuous performance assessment. Maximum number of participants: 15

(5) Study Orientation Courses (SL)

Study orientation courses give an overview of the most important contents of the studies and their future course and create a basis for making an objective personal review of one’s choice of studies.

Attendance is obligatory for the study orientation course. There is a single examination at the end of the course. Maximum number of participants: 25



## **Admission procedures for the admission to courses with a limited number of participants**

The following criteria are considered for allocated places for courses with a limited number of participants:

1. Students, the study time of who would be prolonged without admission to the course, are given priority for admission.
2. If the criteria in no. 1 is not sufficient for regulating admission to a course, students, for whom it is mandatory to pass the course, come first, and students that attend the course as elective course second.
3. Should the criteria in no. 1 and no. 2 not suffice for regulating the admission to a course, the available places are drawn.

**(6) SUBJECT OF PHYSICS:****1<sup>st</sup> Part of studies**

	Type	SSt	ECTS
<b>Examination subject of Experimental Physics</b>		<b>23</b>	<b>32.5</b>
▪ Preparatory Course in Mathematics	VO	1	1
▪ Preparatory Course in Mathematics	PS	1	1.5
▪ Physics Ia: Mechanics	VO	2	3
▪ Physics Ia: Mechanics	SL	1	2
▪ Physics Ib: Mechanics and Heat	VO	2	3
▪ Physics Ib: Mechanics and Heat	PS	1	2
▪ Physics II: Electromagnetism and Optics	VO	5	7
▪ Physics II: Electromagnetisms and Optics	PS	2	3
▪ Physics III: Atoms, Quanta and Solid State Physics (Part 1)	VO	3	3.5
▪ Physics III: Atoms, Quanta and Solid State Physics	PS	2	3
▪ Introductory Laboratory Course for Students of the Secondary School Teacher Accreditation Programme	PR	3	3.5
<b>Examination subject of Theoretical Physics</b>		<b>10</b>	<b>15</b>
▪ Mathematical Methods of Physics 1	VO	3	4.5
▪ Mathematical Methods of Physics 1	PS	2	3
▪ Theoretical Physics (Mechanics, Part 1)	VO	3	4.5
▪ Theoretical Physics 1 (Mechanics) for Students of the Secondary School Teacher Accreditation Programme	PS	2	3
<b>1. Diploma examination in front of the examination board</b>			<b>1</b>
1 <sup>st</sup> Part of studies		<b>33</b>	<b>48.5</b>

**2<sup>nd</sup> Part of studies**

	Type	SSt	ECTS
<b>Examination subject of Experimental Physics</b>		<b>13</b>	<b>14.5</b>
▪ Introductory Laboratory Course for Students of the Secondary School Teacher Accreditation Programme	PR	3	3.5
▪ Physics IV: Nuclear and Particle Physics	VO	4	4.5
▪ Physics IV: Nuclear and Particle Physics for Students of the Secondary School Teacher Accreditation Programme	PS	1	1.5
▪ History of Physics 1	VO	3	3
▪ History of Physics 2	VO	2	2
<b>Examination subject of Theoretical Physics</b>		<b>15</b>	<b>22.5</b>
▪ Theoretical Physics 2 (Quantum Theory, Part 1)	VO	3	4.5
▪ Theoretical Physics 2 (Quantum Theory) for Students of the Secondary School Teacher Accreditation Programme	PS	2	3
▪ Theoretical Physics 3 (Electrodynamics, Part 1)	VO	3	4.5
▪ Theoretical Physics 3 (Electrodynamics) for Students of the Secondary School Teacher Accreditation Programme	PS	2	3
▪ Theory of Relativity, Cosmology and Astrophysics for	VO	3	4.5

Students of the Secondary School Teacher Accreditation Programme	PS	2	3
▪ Theory of Relativity, Cosmology and Astrophysics for Students of the Secondary School Teacher Accreditation Programme			
<b>Examination subject of Subject Didactics</b>		<b>12</b>	<b>12</b>
▪ Introduction to Teaching Physics 1	SE	2	2
▪ Introduction to Teaching Physics 2	SE	2	2
▪ Teaching Physics Experiments in Schools	PS	4	4
▪ Didactics of Theoretical Physics	VO	4	4
<b>2. Diploma examination in front of the examination board</b>			<b>1.5</b>
2. Part of studies		<b>40</b>	<b>50.5</b>

### Elective courses

	<b>SSt</b>	<b>ECTS</b>
Elective courses	<b>9</b>	<b>6</b>
<i>If Physics is not combined with Mathematics, but another subject:</i> It is recommended to pass the following courses: - Linear Algebra (VO3 + PS2 + PR1 – ECTS 7.5) - Analysis 1 (VO3 + PS2 + PR1 – ECTS 7.5) - Analysis 2 (VO4 + PS2 – ECTS 10) - Mathematical Methods of Physics 2 (VO3 + PS2 – ECTS 7.5)		

### Types of courses

(1) Lectures (VO)

A lecture introduces to the terms, results and methods of the respective subject area in a didactical way. It aims at arousing interest and to provide well-structured knowledge and a basic understanding of the area in a relatively short time.

(2) Proseminars (PS)

Proseminars are often closely related to the contents of a lecture. Students get tasks, the solutions of which are discussed in the proseminars. If the proseminar is related to a lecture, the contents of the lecture are repeated and reinforced. Proseminars aim at exercising independent solving of problems, methodical working, presenting of subject-specific contents and scientific furthering of learned contents.

They are courses with continuous performance assessment. Maximum number of participants: 25

(3) Practical Courses (PR)

Practical courses aim at acquiring skills through independent work and promote the practical examination of scientific contents. They are courses with continuous performance assessment. Maximum number of participants: 20

(4) Seminars (SE)

Seminars (SE) are focused on detailed scientific discussion of contents and methods of an area of the subject. Presentations, papers and discussions are common tools of assessment. Students learn to present scientific results in writing (seminar paper) and orally (presentation). They are courses with continuous performance assessment. Maximum number of participants: 15

**Admission procedures for the admission to courses with a limited number of participants**

The following criteria are considered for allocated places for courses with a limited number of participants:

1. Students, the study time of who would be prolonged without admission to the course, are given priority for admission.
2. If the criteria in no. 1 is not sufficient for regulating admission to a course, students, for whom it is mandatory to pass the course, come first, and students that attend the course as elective course second.
3. Should the criteria in no. 1 and no. 2 not suffice for regulating the admission to a course, the available places are drawn.

**§7 Coming into force/going out of force and transitory regulations**

- (1) This curriculum comes into force on 1 October after its announcement in the University of Innsbruck Bulletins (§16 University Act).
- (2) If students choose to change to the new curriculum acc. to the University Act (UniStG) on their own accord, courses that have been passed under the prior curriculum are approved if type and contents correspond to courses of the new curriculum to a large extend.
- (3) The amendments of the curriculum published in the bulletins of 23 April 2007, Issue 28, No. 191 come into force on 1 October 2007 and apply to all students.
- (4) The curriculum published in the University of Innsbruck Bulletins of 8 June 2011, Issue 26, No. 469 comes into force on 1 October 2011 and with the exception of §1 applies to all students.
- (5) §1a as published in the University of Innsbruck Bulletins on 8 June 2011, Issue 26, No. 469 comes into force on 1 October 2011 and applies to all students that commence their studies from the winter semester 2011/2012 onwards.
- (6) §1a as published in the University of Innsbruck Bulletins on 8 June 2011, Issue 26, No. 469 goes out of force at the end of 30 September 2014.

## Attachment: Equivalence list

The examinations for the Secondary School Teacher Accreditation Programme at the Natural Scientific Faculty of the University of Innsbruck for the subjects of Biology and Environmental Protection, Chemistry, Geography and Economics, Mathematics and Physics in the versions of the bulletins of 23 April 2007, Issue 28, No. 191 correspond to the examinations of the curriculum in the version of the bulletins of 8 June 2011, Issue 26, No. 469 in the following way:

### 1. Subject of Biology and Environmental Protection:

Examinations acc. to the curriculum of 2007		Examinations acc. to the amended curriculum of 2011	
Functional Anatomy of Plants	VO2	Structure and Function of Aquatic and Terrestrial Ecosystems	VO2
Experimental Physiology	VO3	Plant Physiology for Students of the Secondary School Teacher Accreditation Programme	VO2
Palaeobotany	VO1	Nutrition	PS2
Exercises in Plant Anatomy	UE3	Anatomy and Morphology of Plants for Students of the Secondary School Teacher Accreditation Programme	VO1+ UE2
Systematic and Evolution of Plants	VO 2	Systematic and Evolution of Plants for Students of the Secondary School Teacher Accreditation Programme	VO2
Plant Taxonomy and Identification Course I or II	VU3	Plant Taxonomy and Identification (Cryptogams and Phanerogams) for Students of the Secondary School Teacher Accreditation Programme	UE3
Organisation and Diversity of Animals I	VO2	Organisation and Diversity of Animals for Students of the Secondary School Teacher Accreditation Programme	VO2
Bauplan of Unicellular and Metazoan Eukaryotes	UE4	Bauplan of Unicellular and Metazoan Eukaryotes Immunobiology I	UE3 VO1
Morphological Tutorial	UE2	Morphological-Zoological Tutorial for Students of the Secondary School Teacher Accreditation Programme	UE2
Fundamentals of Animals Physiology	VO3	Animal Physiology	VO3
Chemistry for Students of the Secondary School Teacher Accreditation Programme for Biology and Environmental Protection	VO 3	Chemistry and Molecular Biology for Students of the Secondary School Teacher Accreditation Programme	VO4 VO3
Classical and Molecular Genetics for Students of the Secondary School Teacher Accreditation Programme	VO4		
Cell Biology	VO2	Cell Biology	VO2
Development and Evolution I	VO2	Development and Evolution I	VO2
Internal Structure of the Earth	VO2	Internal Structure of the Earth	VU2
Evolution of the Earth and Life Dynamics of the Earth	VO3	Evolution and Dynamics of the Earth Human Ecology	VU2
	VO1		VO2
Zoological and Botanical Excursions	EB2	Zoological and Botanical Excursions	EX2
Outdoor Science Education	VU2	Outdoor Science Education	VU2

As chosen by the student: Health and Social Issues or Didactics of Health Education	VO2 VO2	Didactics of Health Education	PS2
Physiological Plant Ecology	VO1	Course in Physiological Plant Ecology for Students of the Secondary School Teacher Accreditation Programme	UE1
Vegetation of Central Europe	VO2	Vegetation of Central Europe for Students of the Secondary School Teacher Accreditation Programme	VU2
Cash Crops	VO1	Cash Crops for Students of the Secondary School Teacher Accreditation Programme	VO1
Comparative Anatomy and Systematics of Vertebrates or Biology of Native Vertebrates	VO2	Introduction to Microbiology	VO2
Ethology	VO 2	Ethology Psychosomatics	VO1 PS1
Physiology of Neurons, Sense Organs and Muscles	VO2	Information and Communication in Organisms for Students of the Secondary School Teacher Accreditation Programme	VO2
Somatology	VO2	Immunology I	VO1
Immunobiology	VO1	Immunobiology II	VO1
As chosen by the student: Environmental Biotechnology VO1 and Food Biotechnology or Ecotoxicology	VO1 VO2	As chosen by the student: Basic Techniques in Microbiology or Toxicology Biodiversity of Native Habitats	VO1 VO1 EX1
Regional Geology	VO2	Molecular Experiments for Students of the Secondary School Teacher Accreditation Programme	UE2
Exercises in Earth Science	UE1	Earth Sciences in the Field	UE2
Elements of Ecology	VO2	Introduction to Ecology	VO2
Ecology of Central European Habitats	SE2	Biodiversity of Native Habitats	SE2
Methodology and Didactics of Teaching Biology	VO2	Methodology and Didactics of Teaching Biology	VO2
Class Experiments in Botany for Students of the Secondary School Teacher Accreditation Programme	UE2	Class Experiments in Botany for Students of the Secondary School Teacher Accreditation Programme	UE2
Zoological Experiments for Students of the Secondary School Teacher Accreditation Programme	UE2	Zoological Experiments for Students of the Secondary School Teacher Accreditation Programme	UE2
Interdisciplinary Outdoor Seminar	IP5	Scientific Learning, Microbiological Experiments for Students of the Secondary School Teacher Accreditation Programme	PJ3 UE2
As chosen by the Student: Teaching Biology in Theory and Practice	VU2	As chosen by the Student: Teaching Biology in Theory and Practice	PJ2

or Agriculture and School	PJ2	or Agriculture and School or Key Topics for Biology Lessons	PJ2  PJ2
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## 2. Subject of Chemistry

Examinations acc. to the curriculum of 2007		Examinations acc. to the amended curriculum of 2011	
Mathematics for Natural Scientists I	VO 2	Chemical Calculations	VO 2
General Chemistry I General Chemistry II	VO 2 VO 2	Experimental Lecture General Chemistry	VO 5
General Chemistry III	VO 2	Chemistry in Aqueous Solution	VO 1
Hazardous Contaminants	VO 1	Laboratory Safety	VO 1
Chemistry of Main Group Elements	VO 2	Experimental Lecture Main Group Chemistry	VO 2

## 3. Subject of Geography and Economics:

Examinations acc. to the curriculum of 2007		Examinations acc. to the amended curriculum of 2011	
1 <sup>st</sup> Part of studies		1 <sup>st</sup> Part of studies	
Basics of Teaching	VU2	Basics of Teaching	VU2
Working with Thematic Maps in School	UE1	Working with Thematic Maps in School	UE1
Geography and School	UE1	Geography and School	VO1
Basic Scientific Methods	VU2	Scientific Working Techniques	VU2
Fundamentals of Cartography	VO2	Fundamentals of Cartography	VO2
Space and Society	VO4	Men and Environment	VO4
Basics of Physical Environments	VO4	Basics of Physical Environments	VO4
Fundamentals of Human Geography	VO4	Fundamentals of Human Geography 1 Fundamentals of Human Geography 2	VO2 VO2
Proseminar in Human Geography	PS2	Proseminar in Human Geography	PS2
Proseminar in Physical Geography	PS2	Proseminar in Physical Geography	PS2
The Tyrol, Alps, Europe	VO2	The Tyrol, Alps, Europe	VO2
Excursions	EU2	Excursions in Regional Geography	EU2
Fundamentals of Economics and Regional Policy	VO2	Fundamentals of Economics and Regional Policy	VO2

Introduction to Management and Economics	VO2	Introduction to Management and Economics	VO2
Exercises in Economics	UE2	Exercises in Economics	UE2
<b>2<sup>nd</sup> Part of studies</b>		<b>2<sup>nd</sup> Part of studies</b>	
Basics of Research on Mountain Ranges	VO2	Basics of Research on Mountain Ranges	VO2
Global Change – Regional Sustainability	VO2	Fundamentals of Global Change	VO2
Excursions on Global Change	EU2	Excursions on Global Change	EU2
Special Topic	VO2	Special Topics	VO2
Seminar in General Geography	SE2	Seminar in General Geography	SE2
Comparative Geography of Mountain Regions	VO2	Comparative Geography of Mountain Regions	VO2
Regional Geography	VO4	Regional Geography Regional Aspects of Global Change	VO2 VO2
Seminar in Regional Geography	SE2	Seminar in Regional Geography	SE2
Excursion	EU4	Excursion	EU4
Detailed Aspects of Economics	VO2	Detailed Aspects of Economics	VO2
Detailed Aspects of Business Studies	VO2	Detailed Aspects of Business Studies	VO2
Seminar in Economics/Economic Geography	SE2	Seminar in Economics/Economic Geography	SE2
Internship of a duration of 4 weeks		Internship of a duration of 4 weeks	
Seminar in Subject Didactics	SE2	Seminar in Subject Didactics	SE2
Theoretical Basis of Teaching Geography and Economics	VO2	Theoretical Basis of Teaching Geography and Economics	VO2
Practical Lesson Planning and Presentation 1	VU2	Practical Lesson Planning and Presentation 1	VU2
Practical Lesson Planning and Presentation 2	VU2	Practical Lesson Planning and Presentation 2	VU2

#### 4. Subject of Computer Science and Computer Science Management

<b>Examinations acc. to the curriculum of 2007</b>		<b>Examinations acc. to the amended curriculum of 2011</b>	
Introduction to Computer Science	VO3	Introduction to Programming Introduction to Practical Computer Science	VO3 VO2
Introduction to Computer Science	PS2	Introduction to Programming Introduction to Practical Computer Science	PS2 SL1
Algorithms and Data Structures	VO3	Algorithms and Data Structures	VO3
Algorithms and Data Structures	PS2	Algorithms and Data Structures	PS2
Discrete Mathematics	VO3	Discrete Mathematics	VO3
Discrete Mathematics	PS2	Discrete Mathematics	PS2
Computer Architecture	VO3	Introduction to Technical Computer Science	VO2
Computer Architecture	PS1	Introduction to Technical Computer Science	PS1



Functional Programming	VO2	Introduction to Theoretical Computer Science	VO2
Functional Programming	PS1	Introduction to Technical Computer Science	PS1
Programming Methodology	VO3	Programming Methodology	VO3
Programming Methodology	PS1	Programming Methodology	PS2
Database Systems	VO3	Database Systems	VO3
Database Systems	PS1	Database Systems	PS2
Operating Systems	VO2	Operating Systems	VO3
Operating Systems	PS1	Operating Systems	PS2
Logic	VO3	Logic	VO3
Logic	PS2	Logic	PS2
Introduction to Scientific Working	VO1 und PS1	Introduction to Scientific Working	PS2
Introduction to Didactics of Mathematics and Computer Science	VO2	Introduction to Didactics of Mathematics and Computer Science	VO2
Operating Systems and Computer Networks in Education	PR3	Computer Science Management	PR3
Methods of Computer Science Education 1 Methods of Computer Science Education 2	VO1 VO1	Methods of Computer Science Education	VO2
Methods of Computer Science Education 1	PS1	Methods of Computer Science Education	PS1
Methods of Computer Science Education 2	PS1	Methods of Computer Science Education	PS1
Programming in Education	SE2	Seminar in Subject-Didactics of Computer Science	SE2
Application Systems in Education	SE2	Seminar in Subject-Didactics of Computer Science	SE2
Programming in Education	PR2	Programming in Education	PR2
Application Systems in Education	PR2	Application Systems in Education	PR2
Computer Networks	VO2	Examination Subject Advanced Computer Science	2
Computer Networks	PS1	Examination Subject Advanced Computer Science	1
Legal Aspects of Computer Science	VO2	Examination Subject Advanced Computer Science	2
Technology, Humans and Society	VO1	Examination Subject Advanced Computer Science	1
Technology, Humans and Society	PS1	Examination Subject Advanced Computer Science	1

## 5. Subject of Mathematics:

Examinations acc. to the curriculum of 2007		Examinations acc. to the amended curriculum of 2011	
Introduction to Mathematics 1	VO3	Linear Algebra 1 Linear Algebra and Analytic Geometry 1	VO3 and VO1
Introduction to Mathematics 1	PS2	Linear Algebra and Analytic Geometry 1	SL1 and PS1
Introduction to Mathematics 2	VO3	Analysis 1	VO4
Introduction to Mathematics 2	PS2	Analysis 1	SL1 and PS1
Introduction to Mathematics 1	PR1	Linear Algebra and Analytic Geometry 1 for Students of the Secondary School Teacher Accreditation Programme	PR2
Introduction to Mathematics 2	PR1	Analysis 1 for Students of the Secondary School Teacher Accreditation Programme	PR2
Introduction to Informatics	PS2	Introduction to Methods in Mathematics, Mathematic Software and Programming	PS3
Introduction to Informatics	VO3	Introduction to Methods in Mathematics, Mathematic Software and Programming Characteristics of Teaching Mathematics	PS3 and VO1
Analysis 2	VO4	Analysis 2 for Students of the Secondary School Teacher Accreditation Programme	VO2
Analysis 2	PS2	Analysis 2 Students of the Secondary School Teacher Accreditation Programme	PS2
Linear Algebra 2	VO3	Linear Algebra and Analytic Geometry 2 Students of the Secondary School Teacher Accreditation Programme	VO2
Linear Algebra 2	PS2	Linear Algebra and Analytic Geometry 2 Students of the Secondary School Teacher Accreditation Programme	PS1
Stochastics 1	VO3	Stochastics 1	VO4
Stochastics 1	PS2	Stochastics 1	PS2
Algebra	VO3	Algebra 1	VO3
Algebra	PS2	Algebra 1	PS2
Ordinary Differential Equations	VO3	Analysis 3 for Students of the Secondary School Teacher Accreditation Programme	VO3
Numerical Mathematics 1	VO3	Analysis 3 for Students of the Secondary School Teacher Accreditation Programme	VO3
Ordinary Differential Equations	PS2	Analysis 3 for Students of the Secondary School Teacher Accreditation Programme	PS2

Numerical Mathematics 1	PS2	Analysis 3 for Students of the Teacher Accreditation Programme	PS2
Mathematical Methods in Physics 2	VO3	Analysis 3 for Students of the Teacher Accreditation Programme	VO3
Mathematical Methods in Physics 2	PS2	Analysis 3 for Students of the Teacher Accreditation Programme	PS2
Discrete Mathematics	VO3	Discrete Mathematics	VO3
Discrete Mathematics	PS2	Discrete Mathematics	PS2
Geometric Modelling, Visualization and CAD	VO2	Geometry for Students of the Secondary School Teacher Accreditation Programme	VO2
Geometric Modelling, Visualization and CAD	PS1	Geometry for Students of the Secondary School Teacher Accreditation Programme	PS1
Elementary Geometry	VO2	Geometry for Students of the Secondary School Teacher Accreditation Programme	VO2
Elementary Geometry	PS1	Geometry for Students of the Secondary School Teacher Accreditation Programme	PS1
Applied Mathematics for Students of the Secondary School Teacher Accreditation Programme	VO2	Statistics	VO2 und PS2
Analysis and Stochastics at School	VO2	Analysis and Stochastics at School	VO2
Analysis and Stochastics at School	PS1	Analysis and Stochastics at School	PS1
Algebra and Geometry at School	VO2	Algebra and Geometry at School	VO2
Algebra and Geometry at School	PS1	Algebra and Geometry at School	PS1
History of Mathematics	VO2	History of Mathematics	VO2
Methods of Mathematical Education 1	VO1	Methods of Mathematical Education 1	VO1
Methods of Mathematical Education 1	PS1	Methods of Mathematical Education 1	PS1
Methods of Mathematical Education 2	VO1	Methods of Mathematical Education 2	VO1
Methods of Mathematical Education 2	PS1	Methods of Mathematical Education 2	PS1
Algebra for Students of the Secondary School Teacher Accreditation Programme	SE2	Algebra for Students of the Secondary School Teacher Accreditation Programme	SE2
Analysis for Students of the Secondary School Teacher Accreditation Programme	SE2	Analysis for Students of the Secondary School Teacher Accreditation Programme,	SE2
Geometry for Students of the Secondary School Teacher Accreditation Programme	SE2	Geometry for Students of the Secondary School Teacher Accreditation Programme	SE2
Stochastics for Students of the Secondary School Teacher Accreditation Programme	SE2	Stochastics for Students of the Secondary School Teacher Accreditation Programme	SE2
Introduction to Didactics of Mathematics and Computer Science	VO2	Introduction to Didactics of Mathematics and Computer Science	VO2

## 6. Subject of Physics

Examinations acc. to the curriculum of 2007		Examinations acc. to the amended curriculum of 2011	
Introduction to Physics	VO5	Preparatory Course in Mathematics  Physics Ia: Mechanics	VO1 and PS1 VO2 and SL1
Mechanics and Heat	VO2	Physics Ib: Mechanics and Heat	VO2
Mechanics and Heat	PS2	Physics Ib: Mechanics and Heat	PS1
Electromagnetism and Optics	VO3	Physics II: Electromagnetism and Optics	VO5
Electromagnetism and Optics	PS2	Physics II: Electromagnetism and Optics	PS2
Atoms and Solid State Physics	VO4	Physics III: Atoms, Quanta and Solid State Physics, Part 1	VO3
Atoms and Solid State Physics for Students of the Secondary School Teacher Accreditation Programme	PS2	Physics III: Atoms, Quanta and Solid State Physics	PS2
Introductory Laboratory Course for Students of the Secondary School Teacher Accreditation Programme	PR3	Introductory Laboratory Course for Students of the Secondary School Teacher Accreditation Programme	PR3
Mathematical Methods in Physics 1	VO3	Mathematical Methods in Physics 1	VO3
Mathematical Methods in Physics 1	PS2	Mathematical Methods in Physics 1	PS2
Theoretical Physics 1 (Mechanics, Part 1)	VO3	Theoretical Physics 1 (Mechanics, Part 1)	VO3
Theoretical Physics 1 for Students of the Secondary School Teacher Accreditation Programme	PS2	Theoretical Physics 1 (Mechanics) for Students of the Secondary School Teacher Accreditation Programme	PS2
Introductory Laboratory Course for Students of the Secondary School Teacher Accreditation Programme 2	PR3	Introductory Laboratory Course for Students of the Secondary School Teacher Accreditation Programme 2	PR3
Nuclear and Particle Physics	VO4	Physics IV: Nuclear and Particle Physics	VO4
Nuclear and Particle Physics for Students of the Secondary School Teacher Accreditation Programme	PS1	Physics IV: Nuclear and Particle Physics for Students of the Secondary School Teacher Accreditation Programme	PS1
History of Physics 1	VO3	History of Physics 1	VO3
History of Physics 2	VO2	History of Physics 2	VO2
Theoretical Physics 2 (Quantum Theory 1)	VO3	Theoretical Physics 2 (Quantum Theory Part 1)	VO3
Theoretical Physics 2 for Students of the Secondary School Teacher Accreditation Programme	PS2	Theoretical Physics 2 (Quantum Theory) for Students of the Secondary School Teacher Accreditation Programme	PS2
Theoretical Physics 3 (Electrodynamics, Part 1)	VO3	Theoretical Physics 3 (Electrodynamics, Part 1)	VO3
Theoretical Physics 3 for Students of the Secondary School Teacher Accreditation Programme	PS2	Theoretical Physics 3 (Electrodynamics) for Students of the Secondary School Teacher Accreditation Programme	PS2

Theory of Relativity, Cosmology and Astrophysics for Students of the Secondary School Teacher Accreditation Programme	VO3	Theory of Relativity, Cosmology and Astrophysics for Students of the Secondary School Teacher Accreditation Programme	VO3
Theory of Relativity, Cosmology and Astrophysics for Students of the Secondary School Teacher Accreditation Programme	PS2	Theory of Relativity, Cosmology and Astrophysics for Students of the Secondary School Teacher Accreditation Programme	PS2
Didactics of Physics 1	SE2	Didactic of Physics 1	SE2
Didactic of Physics 2	SE2	Didactic of Physics 2	SE2
Teaching Physics Experiments at School	PS 4	Teaching Physics Experiments at School	PS 4
Didactics of Theoretical Physics	VO 4	Didactics of Theoretical Physics	VO 4