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

Principal version published in the University of Innsbruck Bulletin of
27 April 2007, Issue 46, No 212

Correction published in the University of Innsbruck Bulletin of
1 October 2008, Issue 1, No 3

Curriculum for the Master's Programme in **Geography: Global Change – Regional Sustainability** at the Faculty of Geo- and Atmospheric Sciences, University of Innsbruck

§ 1 Profile

The Master's Programme in Geography: Global Change – Regional Sustainability adds knowledge and skills to a relevant bachelor's programme forms the basis for scientific activities on a high academic level and promotes analytical and integrative skills as well as network thinking at the interface between society and environment.
The compulsory modules represent a framework of subject-specific, methodical and practical contents. In addition, the programme offers the ability to focus on the following subject areas:

- urban and regional development
- development research
- climate and cryospheric science
- natural hazards research

These subjects are being extended and completed by elective modules.

Regardless of the elected field of specialisation, students are able to scientific work according to international standards, to plan and implement field works, organize and manage projects as well as to proceed in a target- and result-oriented manner.
With a wide-ranging geographical and interdisciplinary training, the study programme conveys subject-specific and methodical skills to elaborate responsible solution strategies in managing complex issues, with special attention to teamwork skills. Students are encouraged to practice and specialise in presentation skills, scientific writing as well as the leading of work groups and discussions.
Occupational profiles of graduates range from specialist and managerial staff in the academic sector, engineering and planning offices, relevant economic fields as well as NGOs and public service.

§ 2 Scope and duration

(1) The Master's Programme in Geography: Global Change – Regional Sustainability covers 120 ECTS-Credits. One ECTS credit corresponds to a work load of 25 hours. This corresponds to a duration of study of four semesters.

(2) In the Master's Programme in Geography: Global Change – Regional Sustainability seven compulsory modules and six elective modules (see § 6) are to be taken.

§ 3 Entry Requirements

The entry requirements for the Master's Programme in Geography: Global Change – Regional Sustainability are a relevant bachelor's degree, a technically relevant bachelor's degree from an university of applied sciences, or another equivalent degree from an accredited domestic or foreign post-secondary educational institution.

§ 4 Courses and numbers of participants

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

Lectures introduce students to the main areas of the subject matter and its applicable methods, with particular reference to essential facts and key doctrines in the field. In addition, lectures cover special research areas and incorporate the latest advances in scientific development.
Maximum number of participants: 200

(2) Practical courses (UE *'Übung'*):

Practical courses are courses using continuous assessment. They cover aspects of the subject in the form of practical work, case reviews, short presentations and homework discussions. They complement the lectures, with a deeper examination of the subject matter.
Maximum number of participants: 20

(3) Lecture-practical course (VU '*Vorlesung/Übung'*):

Lecture/tutorials are integrated courses using continuous assessment, where lectures and tutorials are closely linked with one another. The tutorials cover key issues and their solutions, in accordance with the scientific objectives of the master's programme regarding professional practice.
Maximum number of participants: 20

(4) Excursion-practical course (EU '*Exkursion/Übung'*):

Excursion-practical courses are courses using continuous assessment, and covers study topics in the field. In doing so, students will learn the appropriate methods to meet the demands of defined practical challenges and problems.
Maximum number of participants: 20 (in difficult terrain: 12)

(5) Seminar (SE '*Seminar'*):

Seminars are courses using continuous assessment comprised of scientific discussion. Participants must contribute in written and oral form, which will be evaluated on its technical and methodical merits, as well as the quality of presentation. They are thematically linked with the subject specialisation with elective modules (§ 6).
Maximum number of participants: 15

§ 5 Modules (Title, Type, Description, Course Content)

(1) Compulsory modules

1.

Module 1. Basics of Global Change and Risk Research *Objective* Students know the basic theoretical, methodological and practically-oriented concepts of the Human-Environment relationship and they can do this with questions from research into Global Change and Risk Research.	**7.5 ECTS-AP**
Basics of Man-Environment-Relationships in Global Change and Risk Research, VO2 *Contents* The lecture conveys the basic principles of different theoretical approaches of man-environment-relationships and illustrates selected examples and concrete applications of global change and risk research. Gender aspects are also being considered. **Aspects of Man-Environment-Relationships**, SE2 *Contents* In the course, selected aspects of global change and risk in man-environment-relationships will be investigated and discussed based on selected concepts, theories and topics in the field of socio-ecological research.	3.5 4.0

2.

Module 2. Geography of Mountain Regions *Objective* Students know the human/environment relationship in the mountain system and they can transfer fundamental ecological and social principles to various locations.	**7.5 ECTS-AP**
Basics of Research on Mountain Regions, VO2 *Contents* The lecture deals with genesis, relief, climatic characteristics and scale factors of vegetation and use, as well as settlement and economic areas with its elevation limits, mountain internal and external interrelations, demographic development and cultural characteristics of mountain areas. **Comparative Geography of Mountain Regions**, VO2 *Contents* Drawing on selected subject-specific examples, different mountain areas are compared with each other.	3.5 4.0

3.

Module 3. Specific Methods in Geoinformatics *Objective* Students have mastered special methods of Geoinformatics and can apply them within projects.	**7.5 ECTS-AP**
Specific Geoinformatics, VU4 *Contents* The lecture presents and practices special applications of geoinformatics from the field of commercial software packages and open-source-products-based solutions.	7.5

4.

Module 4. The Legal Basis of Urban and Regional Planning *Objective* Students are familiar with the basics of public law particular with the planning and administration laws and can apply their knowledge in spatial planning.	**7.5 ECTS-AP**
Introduction to Administrative Law, VO4 *Contents* The lecture conveys legal basics of regional and land use planning on a national and European level.	7.5

5.

Module 5. Applied Geoinformatics *Objective* Students can solve complex problems with the modern methods of Geoinformatics on their own.	**7.5 ECTS-AP**
Applications of Geoinformatics, VU4 *Contents* The course conveys and practices the use of modern software offers from the field of geoinformatics for special issues of man-environment-interaction.	7.5

6.

Module 6. Policies of Regional Sustainability *Objective* Students know the basic concepts of sustainability and can judge and develop regionally oriented sustainable development strategies.	**7.5 ECTS-AP**
Key Questions of Sustainability, VO2 *Contents* The lecture illustrates and critically questions theoretical basics and interdisciplinary references of the concept of sustainability and discusses, in practical examples, implementations and difficulties in different spatial contexts. Gender aspects are considered in the course.	3.5

Policies of Sustainable Development, VU2 *Contents* The course deals with basic principles of strategies of sustainable development in space-relevant action fields, knowledge of (regional) political instruments to implement on different scale levels (global to local) as well as the discussion and evaluation of concrete practical examples. Gender aspects are considered in the course.	4.0

7.

Module 7. Master Thesis Defence *Objective* After autonomously writing their Master Thesis on a topic from the enhanced areas corresponding to the requirements of good scientific practice, students can defend their findings in the form of a lecture.	**2.5 ECTS-AP**
Defensio *Contents* The master's thesis is presented and defended in a public presentation and in front of an examination board.	2.5

(2) Elective modules

1.

Module 8. Global Change and Risk in Urban and Regional Development of Different Social and Economic Systems *Objective* Students can analyse and judge the chances and risks of global change for urban and regional development. They can understand theoretical fundamentals and apply their findings critically in order to infer from them strategies of spatial development in specific regions.	**7.5 ECTS-AP**
Theories and Policies of Urban and Regional Development, VO4 *Contents* The lecture presents and discusses the most important theories and strategies of spatial and economic development. Gender aspects are being considered in the lecture.	7.5

2.

Module 9. Globalisation and Spatial Development *Objective* Students recognise in globalisation an important factor of contemporary special development and can work on sustainable spatial development. *Prerequisites* successful completion of module 8	**7.5 ECTS-AP**
Globalisation and Urban Development, VU2 *Contents* The module is based on the theoretical principles and implements them in a regional context by illustrating the effects of global change in different regions. The lecture and practical course elaborates the development of globalization in traditional urban patterns and culturally defined urban models. Gender aspects are being considered in the course.	3.5

Recent publications on urban and regional development under the influence of globalisation, SE2 *Contents* The course introduces current developments of globalization, urban and regional research by written and oral contributions and discusses current research. A major focus of the course is functional abilities (reading, discussion, structuring, recording etc.).	4.0

3.

Module 10. Urban and Regional Change *Objective* Students can grasp the spatial processes of a specific space (town or country); they can adequately describe and explain and apply spatial and social scientific methods. *Prerequisites* successful completion of module 9	**7.5 ECTS-AP**
Introduction to Empirical Work, VU2 *Contents* This course (lecture and practical training) offers an introduction into the specific problem case and the investigation area; training of empirical techniques (mapping, interviews, etc.) and evaluation procedures (statistics, illustration, visualization). **Field Course in Urban and Regional Change**, UE2 *Contents* The field course with a duration of at least one week offers an application of theoretical and practical knowledge on the basis of a specific example.	3.5 4.0

4.

Module 11. Sustainable Utilisation of Scientific Results *Objective* Students can mediate scientific findings in written and oral form and they have mastered the necessary formal guidelines for this. They can use statistical verbal, and graphic and interpretation methods of analysis; they can work on solution models and estimate the chances of their success. *Prerequisites* successful completion of module 10 or 13	**7.5 ECTS-AP**
Data Analysis, Development of Adapted Approaches, Report, Project Evaluation and Project Presentation, UE4 *Contents* The course conveys the basic principles of data analysis, development of adapted approaches, report, project evaluation and project presentation.	7.5

5.

Module 12. The Third World between Globalisation and Sustainability *Objective* Students can understand the theoretical basis of development research they can apply their finding critically and infer from strategies for spatial development in specific regions of the Third World. *Prerequisites* successful completion of module 8	**7.5 ECTS-AP**
Globalisation and the Third World, VU2 *Contents* The course deals with the most important theories and strategies of development research and discusses issues of development policy. Gender aspects are being considered in the course. **Case Studies of Sustainable Regional Development**, SE2 *Contents* The course presents, in written and oral form, the most important theories and strategies of development research, within the context of current research fronts, which are critically discussed according to their practical implementation possibilities and limitations.	3.5 4.0

6.

Module 13. Processes of Regional Development *Objective* Students can recognize, understand and explain a development problem in a specific local regional context, they can understand and explain a stressed relationship between global change and regional sustainability using the example of specific locations in the Third World; they practice cooperation with the decision-makers in the context of governance strategies and acquire experience of empirical work. *Prerequisites* successful completion of module 12	**7.5 ECTS-AP**
Project Study in the Third World, UE4 *Contents* Within the project study, the theoretical skills are practically illustrated in a selected area of the Third World. Gender aspects are being considered in the course.	7.5

7.

Module 14. Processes and Effects of Global Change in Mountain Ecosystems *Objective* Students can describe and explain climate-instigated phenomena and processes in mountain ranges eco systems.	**7.5 ECTS-AP**
Natural Processes in Mountain Regions, VO4 *Contents* The lecture gives an overview of current and present processes in mountain ecosystems. The focus is laid on climate dynamics, glacier, snow and avalanches, landslides, rainfall runoff, alpine soils and vegetation.	7.5

8.

Module 15. Regional Aspects of Global Climate Change in High Mountain Environments - Data Bases *Objective* Using regional examples, students can recognize climate-instigated processes of mountain areas, thanks to their in-depth theoretical background. *Prerequisites* successful completion of module 14	**7.5 ECTS-AP**
Climatic and Environmental Dynamics I, VU2 *Contents* The course conveys the basic principles of energy and material flows in the mountains, climate-controlled processes and their analysis and parameterization in different scale ranges of time and space. **Field Course in Climate-Cryosphere-Relationships**, UE2 *Contents* The course conveys the recognition and understanding of current climate indicators as well as climate witness in the mountains.	3.5 4.0

9.

Module 16. Regional Aspects of Global Climate Change in High Mountain Environments - Analysis *Objective* Students can correctly interpret climate indicators in the mountains and they can master approaches to model them. *Prerequisites* successful completion of module 15	**7.5 ECTS-AP**
Climatic and Environmental Dynamics II, VU2 *Contents* The course treats the understanding of climate change and mountain hydrology, as well as of hydroclimatological processes at the Alpine land surface. **Evaluation**, UE2 *Contents* In this course the data recorded in the framework of the field trip will be analysed and applied in scientific investigations and the simulation of Alpine boundary layer processes.	3.5 4.0

10.

Module 17. Sustainable Ecological Management in Mountain Regions *Objective* Students have mastered the basic concepts of sustainability and they can independently analyse and evaluate further developments in the Human/Environment relationship. *Prerequisites* successful completion of module 16 or 19	**7.5 ECTS-AP**
Principles of Sustainable Development in Mountain Regions, VO2 *Contents* The lecture demonstrates and discusses special framework conditions for sustainable developments, with special attention to the requirement for successful strategies in very sensitive mountain regions. **Comparative Project Evaluation and Presentation**, UE2 *Contents* The course discusses and critically evaluates the results from the individual works of the modules 12c and 13c together with the results of the modules 12d and 13d of the specialisation in natural hazard research.	3.5 4.0

11.

Module 18. From Natural Hazards to Risk Research *Objective* Students know the basics of modern risk based natural hazard research and in this context they can grasp, administer and govern relevant data. *Prerequisites* successful completion of module 14	**7.5 ECTS-AP**
Man-Environment-Interactions, VU2 *Contents* The course conveys the basic interactions between the human being as an addressee on the one side and as a source of natural hazard processes. **Data Acquisition for Regional/Local Natural Hazard Risks**, UE2 *Contents* Based on a concrete project example, the course practices the data collection and processing from different analogue and digital archives.	3.5 4.0

12.

Module 19. Regional Aspects of Natural Hazard Risks *Objective* Students can autonomously analyse and evaluate risks and can reflect critically on new developments in the area of risk research. *Prerequisites* successful completion of module 18	**7.5 ECTS-AP**
Current Issues of Risk Research, SE2 *Contents* Current developments in the field of risk research and natural hazard mitigation will be central in this seminar. Referring to examples, critical discussions of key-concepts and approaches will take place. **Regional Risk Analysis and Assessment**, UE2 *Contents* Using the example of a concrete area (municipality, valley) the students practice analysing and assessing risks coming out of natural hazard processes.	3.5 4.0

13.

Module 20. Extended Gender Aspects *Objective* Students are familiar with the current approaches in gender-related research and with regard to sustainability, in anthropological as well as natural scientific disciplines and in the field.	**7.5 ECTS-AP**
Gender Aspects in Regional Planning VO2 *Contents* The lecture informs about development and current approaches of gender research, with special attention to planning theories and gender competence in urban, regional and spatial planning – in particular, environmental planning. It also considers aspects of feminist ethics in regional planning. **Gender Aspects in Regional Development and Planning** UE2 *Contents* The course deals with selected aspects of gender research – in particular, in the fields of regional and urban development as well as ecological and environmental planning. It also considers the results of spatial and nature scientific gender studies and research.	4.0 3.5

14.

Module 21. Applied Geology (2) *Objective* Students have advanced knowledge in practical geology enabling them to solve engineering geological and hydro geological problems.	**7.5 ECTS-AP**
Hydrogeology (2), VO1 *Contents* The lecture introduces selected aspects of hydrogeology and conveys the current state of research in this field. **Hydrogeology (2)**, UE1 *Contents* The course provides specialisation of the theoretical basic principles and concepts covered in the lecture. **Engineering Geology (2)**, VO2 *Contents* The lecture introduces selected aspects of engineering geology and conveys the current state of research in this field. **Engineering Geology (2)**, UE1 *Contents* The course provides specialisation of the theoretical basic principles and concepts covered in the lecture.	2.0 1.0 4.0 0.5

15.

Module 22. Quaternary Geology *Objective* Students possess a profound knowledge of quaternary climate and environmental changes and they can correctly recognize and classify sediments and types of terrain, which occurred through these individual processes.	**7.5 ECTS-AP**
Quaternary Geology and Palaeoclimatology, VO2 *Contents* The lecture deals with the evidences of quaternary climate changes based on different marine and terrestrial climate archives, and it discusses the issues of causes and interactions. **Quaternary Field Course**, VU2 *Contents* The introductory theoretical part and the field course convey practical quaternary geological working focusing on profile recording and mapping.	4.0 3.5

16.

Module 23. Ice and Climate *Objective* Students learn the basics of the climate system of the Earth with special reference to the cryosphere.	**7.5 ECTS-AP**
Physical Glaciology, VO2 *Contents* The lecture deals with energy and water cycle between atmosphere and cryosphere, mass balance of glaciers and polar ice masses in measurements and models, equilibrium sizes and their reactions to climate changes, simple hydrometerological models of glacial catchment areas. **Physical Climatology**, VO 2 *Contents* The lecture treats the climate system, forcing of the climate system and energy balance, general circulation of atmosphere and ocean, hydrosphere and cryosphere, biogeochemical cycles, aerosols and volcanism, natural climate variability, anthropogenic climate change.	3.5 4.0

17.

Module 24. Glaciological Field Course *Objective* Students learn in the field the basic principles of glaciological work and measurements.	**7.5 ECTS-AP**
Proseminar Glaciological Field Course, PS2 *Contents* The course illustrates the theoretical and practical preparation of the glaciological field course. Students give a preliminary presentation. **Glaciological Field Course**, PR 2 *Contents* The course implements practical works such as measurements, observations of boundary layers of a glacier, snow chamber examinations, radiation conditions.	3.5 4.0

18.

Module 25. Palaeoclimate *Objective* Students know palaeoclimatic processes and conditions and can compare these with today's conditions.	**7.5 ECTS-AP**
Palaeoclimate, VO3 *Contents* The lecture deals with the collection of palaeoclimate data, for example ice core data and their quantitative interpretation and chronologization. It also discusses climate conditions based on further proxy data.	7.5

§ 6 Elective modules

A part of the academic requirement of the Master's Programme in Geography: Global Change – Regional Sustainability must be fulfilled from six elective modules. This part of the academic requirement consists of

1. four interrelated modules of specialisation, which must be chosen from the fields of
   a) urban and regional research (modules 8, 9, 10 and 11) or
   b) development research (modules 8, 11, 12 and 13) or
   c) climate and cryosphere research (modules 14, 15, 16 and 17) or
   d) nature hazard research (modules 14, 17, 18 and 19),

   as well as

2. two additional interrelated modules of a specialisation, which was not chosen according to § 6 Z 1
   a) modules 9 and 10 or
   b) modules 12 and 13 or
   c) modules 16 and 17 or
   d) modules 18 and 19 or

   from two interrelated modules of another master's programme at the Faculty of Geo- and Atmospheric Sciences
   e) the two modules 21 and 22 from the Master's Programme in Earth Sciences

   or

   f) two from the modules 23, 24 or 25 from the Master's Programme in Atmospheric Sciences or

   from two modules, consisting of module 20 as well as one module from the list of § 6 Z 2 lit. a to f.

§ 7 Master's Thesis

A master's thesis, amounting to 27.5 ECTS-Credits, is to be completed. The master's thesis is a scientific work which serves as proof of the students' ability to work independently on a topic from a specialised field in geography. The topic must be chosen in prior agreement with the supervisor.

§ 8 Participation Restrictions

For courses (practical course, lecture-practical course, excursion-practical course and seminar) with a limited number of participants, selection is determined as follows:

1. Students are preferred if non-inclusion would prolong the duration of their studies.
2. If criterion (1) is insufficient to regulate the admission to a course, students for whom the course is part of a mandatory module are preferred to students for whom the course is part of an elective module.

If criteria (1) and (2) are insufficient to regulate the admission to a course, the available places are drawn by random.

§ 9 Examination regulations

(1) The performance evaluation of a module is determined by course examinations.

(2) Courses of type VO (lecture) are subject to a written examination. In seminars, the success of the seminar paper, an oral presentation and class participation will be evaluated. For all other evaluative courses the tutor will determine the examination method at the beginning of the course.

(3) The master's thesis must be defended to an examining committee. The Master's Thesis Defence comprises a presentation of the main findings of the master's thesis, a public discussion and the cross-examination of the committee members.

(4) If modules/courses from other master's programmes are held in the Faculty of Geo- and Atmospheric Sciences or study programmes at other faculties, the corresponding examination regulation is valid. This applies to modules 21 and 22 from the Master's Programme in Earth Sciences at the Faculty of Geo- and Atmospheric Sciences and modules 23, 24 and 25 from the Master's Programme in Atmospheric Sciences at the Faculty of Geo- and Atmospheric Sciences.

§ 10 Academic degree

The graduates of the Master's Programme in Geography: Global Change – Regional Sustainability are awarded the academic degree of "Master of Science", abbreviated as "MSc".

§ 11 Assignment of the programme

The Master's Programme in Geography: Global Change – Regional Sustainability is assigned to the natural scientific studies.

§ 12 Validity

The curriculum is effective as of 1 October 2007.

Appendix 1: Recognition of examinations

Positive examination results from the Diploma Programme in Geography at the University of Innsbruck (curriculum published in the University of Innsbruck Bulletin of 16 August 2001) are recognised as equivalent for the Master's Programme in Geography: Global Change – Regional Sustainability in accordance with § 78, paragraph (1), University Act 2002.

Master's Programme in Geography: Global Change – Regional Sustainability		**Diploma Programme in Geography Curriculum of 16 August 2001**	
Module 2			
Geography of Mountain Regions			
Basics of Research on Mountain Regions	VO2	Austria, Europe	VO2
Comparative Geography of Mountain Regions	VO2	Comparative Geography of Mountain Regions	VO2
Module 3			
Specific Methods in Geoinformatics			
Specific Geoinformatics	VU4	Elective compulsory subject Methods: Geoinformatics	VU,UE4
Module 4			
Legal Basics of Urban and Regional Planning			
Introduction to Administrative Law	VO4	Fundamentals and Theories of Economics	VO 2
		Spatially Relevant Aspects of Public Law	VO2
Module 5			
Applied Geoinformatics			
Introduction to Administrative Law	VU4	Elective compulsory subject Methods: Geoinformatics	VU,UE4
Specialisation Urban and Regional Research		Elective compulsory subject Project module Spatial Research and Regional Planning	VU,SE,UE12
Module 9			
Globalisation and Spatial Development			
Module 10			
Urban and Regional Change			

Module 11			

Sustainable Utilisation of Scientific Results			
Specialisation Natural Hazards Research		Elective compulsory subject Project module Geoecology and Spatial Research	VU,SE,UE12
Module 15			
Regional Aspects of Global Climate Change in High Mountain Environments - Data Bases			
Module 16			
Regional Aspects of Global Climate Change in High Mountain Environments - Analysis			
Module 17			
Sustainable Ecological Management in Mountain Regions			
Specialisation Natural Hazards Research		Elective compulsory subject Project module Geoecology and Spatial Research	VU,SE,UE12
Module 18			
From Natural Hazards to Risk Research			
Module 19			
Regional Aspects of Natural Hazard Risks			
Module 17			
Sustainable Ecological Management in Mountain Regions			

Appendix 2: Recommended course sequence